THE AMERICAN GAS LIGHT JOURNAL

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME XCI., No. 22 Whole No. 1,799. | NEW YORK, MONDAY, NOVEMBER 29, 1909. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. H. WADELTON, Manager. THOMAS J. CUNNINGHAM and ELBERT P. CALLENDER, Editors.

Published on each Monday of the year, at No. 42 Pine Street, New York City.

Telephone.—2966 John.

Terms of Subscription, Including Postage.—For the United States, $3; Canada, $4 per annum. European countries, $5 (£1—25 francs).

Remittances should be made either by post office order, express money order, registered letter, or bank draft on New York, payable to the order of A. M. Callender & Co.

Correspondence.—Wishing to make this JOURNAL a gazette of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, correspondence is solicited for publication from all who make the study of those subjects a pleasure or a profession.

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The American News Company, Nos. 39 and 41 Chambers street, New York, are agents for this JOURNAL. Newsdealers will send orders to them. All payments to be made in advance. Single copies, 10 cents.

Indexes for the previous 6 months will be found in the First number of July and the First number of January.

Books.—We will forward by express, at publisher's lowest rates, any book—scientific or otherwise—to any address in the United States or Canada. We would suggest to our patrons that to avoid the risk and expense consequent on sending us the money (we do not send books C. O. D.), that orders for books be sent us through the Purchasing Department of the American Express Company.

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ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

BRIEFLY TOLD.

FIFTH ANNUAL MEETING, EMPIRE STATE GAS AND ELECTRIC ASSOCIATION.—The meeting was called to order at 2 P.M Wednesday, November 17th, by the Second Vice-President, Mr. R. M. Searle, of Rochester. Mr. Searle explained his presence in the chair by stating that, on account of Mr. Wm. T. Morris, the President, having been summarily called West by pressing business, and that, on account of the serious illness of Mr. M. J. Brayton, the First Vice-President, the duty of presiding at the meeting devolved upon him. Letters were later read from both Mr. Morris and Mr. Brayton, explaining their regret at being unable to be present. The Secretary reported a gratifying increase in membership during the year, both in the active and associate divisions. The Chairman stated that it was with deep regret he had to further announce that the Treasurer, Mr. T. O. Horton, was unable to be present to submit his report in person, on account of ill health, and the Secretary, therefore, presented the same.

On behalf of the Committee on Accounting, Mr. E. C. Scobell, Chairman, presented a report. It had been found early in the year that a considerable demand existed among the smaller companies for an explanation of bookkeeping methods and for sample forms, by means of which the classification of accounts prescribed by the Commissions could be kept. In order to meet this demand the Committee has prepared a report which was divided into a number of sections, which sections were defined under four elaborate chapters. The report was accompanied by a set of forms, printed in full size, and comprising no less than 35 sub-divisions.

Later in the session the Association decided that one copy of the report should be given to each member company, and that other copies desired, or copies ordered by non-members, could be purchased at the nominal price of $5 from the Association.

In commenting on this report, Chairman Searle said: "The value of this report of the Committee on Accounting is really about $500 a copy, if you take in the time given to it by the members of the Committee. Each company getting a copy of the report is obtaining the value of a year's membership dues in just that one book and set of blanks."

As Chairman of the Committee on Arrangements for Sectional Meetings, Chairman Searle presented a verbal report, in which he said: "The Empire State Gas and Electric Association can be made stronger than a national association, as far as we are concerned locally, and the sectional meeting, as the Secretary recommended in one of his reports, will be the means of bringing a number of our companies together. The officers and heads of departments in the smaller companies can more easily attend a sectional meeting in their locality, with the result that the attendance at the sectional meetings would be very large, and the interest in these sectional meetings should be very great. If some of the smaller companies had to send their representatives to a meeting in New York city, they would have to miss a dividend, and maybe some of the large ones, too, so I believe that we can bring about the plan of holding sectional meetings in various sections of the State and that a good deal of practical benefit will follow from that plan." Mr. R. A. Davidson submitted a report

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from the Committee on Insurance, which virtually dealt entirely with the liability class of insurance. The report pointed out the manner in which the rates for this class of insurance could be materially reduced, if a considerable number of the companies could get together over the matter, and the resulting discussion brought out some difference of opinion as to the advisability of carrying liability insurance in any of the insurance companies as against setting up a fund for this purpose.

Mr. T. R. Beal submitted a report from the Committee on Taxation, which took up in detail all new laws on this subject passed at the last session of the Legislature, and cited a number of court decisions rendered during the past year. Mention was also made of the United States Government Corporation Tax.

After a short adjournment the technical session in respect of the electric section of the Association was held. The star number of the programme could easily be affixed to the paper submitted by Mr. C. H. B. Chapin, whose theme concerned "The Development of Electric Light and Power in New York State." It was a masterly presentation of a subject permeated with astounding facts and figures, and the scholarly appearing author and recounter never went beyond bare truth in putting forth the matters connected with the amazing growth of an industry less than one-third century old. Mr. P. T. Glidden presented a well-told tale of "An Electrical Show in a Community of 45,000," and Mr. C. G. Durfee's contribution had to do with "Electric Meter Testing." To be sure he did not tell all that he knew about this perplexing subject, but that which he did tell was of sufficient interest and moment to hold the close attention of his hearers. Thursday morning was given over to the gas section of the convention, and a right interesting session it proved. Three papers were listed, and they were good ones. The first was by Mr. W. K. Eavenson, of the Consolidated Gas Company, of New York, whose well written, cleverly read paper on "Fuel Appliances," was vividly illustrated by a well-handled series of stereopticon slides. Mr. Eavenson is not by any means unknown in this field of the gas industry, as his success in placing these users of gas in Phildelphia, and now in New York, has been marked. Mr. Eavenson abets his system with careful method, the result being valuable to the purchaser and to his principal. Another true and tried gas man, Mr. M. H. Spear, Manager of the New York and Queens Gas Company, of the Flushing district of Greater New York, had a well-thought out paper on "Gas Prepayment Meter Practice." Although it was quite prolix, the clever gentleman from Queensboro did not tell all he knew respecting this intricate subject, several "dark" phases of which he went through in 1908. However, all's well that ends well, and the troubles anent prepayment meter matters are seemingly at an end in the old Dutch settlement of Flushing. An excellent paper, on "Accidents," by Mr. C. D. Robinson, closed the technical side of the meeting. At 1 P.M. the members partook of a luncheon served in the dining room of the Engineers' Club, fifty or more being present. Luncheon over, the general session, to clean up the committees findings, a free talk on how to advance the Association's aims, and the election of officers, was convened. The election resulted in these choices:

President—Mr. Charles R. Huntley.
First Vice-President—Mr. M. J. Brayton.
Second Vice-President—Mr. R. M. Searle.
Treasurer—Mr. G. W. Curran.
Secretary—Mr. C. H. B. Chapin.
Executive Committee—Messrs. W. R. Addicks, R. M. Searle, P. T. Glidden, L. C. Purdy, J. J. Humphreys, Jr., M. J. Brayton, G. W. Curran, N. L. Dame and C. R. Huntley.

The attendance was quite satisfactory, the interest was continuous and Chairman Searle, it is really needless to add, was in every sense up to the exacting duties of Chairman, even though he occasionally disregarded strict adherence to parliamentary procedure.

ORNAMENTAL AND DISPLAY STREET LIGHTING BY GAS.—The widespread interest that is being taken throughout the country in artistic, as well as abundant, street lighting, has not passed Portland, Ore., by, as was shown in our issue for the 8th inst., and that the illuminant is gas is certainly a most healthy sign. The JOURNAL has advocated, both editorially and by special illustrated articles, the value of this phase of the business, and trusts that the work described on page 1099 will be a further incentive to add to the already large number of gas lamps under maintenance contracts. Aside from the revenue from street lighting contracts the value, from an advertising standpoint, is incalculable. Gas burners need maintenance, and those upon the streets will receive more notice than those indoors, especially when they are arranged in an attractive manner as has been in the case in Oregon. That the subject is a live one among gas men in Europe as well as at home, despite the larger success which has attended the use of gas for this purpose, would seem evident, for at the recent meeting of the London and Southern District Junior Gas Association, their President, Mr. Corbett Woodall, opened his address with the subject of street lighting. In fact, all signs seem pointing to the fact that street lighting will as surely receive far greater attention in the future than it did in the past. Beyond a doubt it surely merits every possible consideration, a consideration that will have been properly exploited should it begin with the authorities and be carried out by the companies.—SPECTATOR.

CURRENT MENTION.—

MR. ARTHUR HEWITT, who succeeds Mr. W. H. Pearson as Manager of the Consumers Gas Company, of Toronto, Ont., has been with the Company some time, and that he seems to have worthily won his spurs would go when one recurs to the excellent paper read by him last June at the Montreal meeting of the Canadian Gas Association, in which he forcibly told how 5,000 gas arcs had been put in service in Toronto in an incredibly short period of time. To Mr. Hewitt the larger share of credit should be given for the outcome. He has the manner of a thinking man, and we of the States will follow his career with interest; for he succeeds a man who was very near and dear to us all on this side of the border.

CONTRACTS awarded to the Western Gas Construction Company this month include: A complete coal gas plant for the Milton (Pa.) Gas Company, and a 4-foot 6-inch water gas set, with P. & A. apparatus and exhauster, for the municipal lighting plant at Wakefield, Mass. The first award speaks volumes for the clever management of Mr. C. W. Butterworth, at Milton, who seems to have planned for the taking on of consumers with diligent and speedy success.

GLENN R. CHAMBERLAIN, Secretary of the Michigan Gas Association, informs us to the following effect, and asks us to note that prompt action will be appreciated—his address is care Grand Rapids (Mich.) Gas Light Company: "Several members who attended the last meeting of the Michigan Gas Association, held on board the boat, to the Soo and return, have expressed a desire for photographs of the trip, and as there seemed to be sufficient sentiment of this kind to warrant doing so, we have asked some of the members who made liberal use of their kodaks on the trip to forward to us the best of their negatives. From these a collection of about 20 representative pictures has been chosen, to be made into a souvenir portfolio of unmounted kodak views, which we offer to you for $2.50."

WE are pleased to report that Mr. Henry I. Lea, of Chicago, has succeeded in refinancing his Du Quoin (Ills.) gas property and is planning an aggressive business-getting campaign at that point. He has also recently completed consulting work in connection with the plant of the Kentucky Heating Company, of Louisville, and on the plant of the Racine (Wis.) Gas Light Company. As a sign of the times, he is at present engaged on corresponding work in connection with the plant of one of the important syndicates. These things should keep him busy until the New Year, at any rate.

THE plant and all else that pertained to ownership in the Haverhill (Mass.) Gas Light Company have been taken over by a syndicate. The only thing sure about the concern is that a Mr. Vittinghoff is its mouthpiece.

MR. WILLIAM B. GREEN, Cashier of the Adams (Mass.) Gas Company since 1902, has resigned, to engage in the insurance business in that city. The Company will be able to secure a successor to Mr. Green, of course, but that it will be able to get a better one is not at all likely. "Col. Frank's" men don't seem to be sympathetic with the new ownership.

Book Reviews.

"*The Technical Press Index of the Engineering Digest.*"—January, 1908, to June, 1909, inclusive.

The most excellent descriptive index which appears each month in the "Engineering Digest" has been compiled in book form, for an 18-month period, ended June, 1909. It contains a short description of over 11,000 technical articles, and should surely find its way into every library of reference. The Technical Literature Company, of New York, is the publisher.

REPORT OF PROCEEDINGS, FOURTH ANNUAL MEETING, AMERICAN GAS INSTITUTE.

HELD IN THE HALL OF ELKS, DETROIT, MICH., OCTOBER 20, 21 AND 22, 1909.

FIRST DAY—MORNING SESSION.

The Fourth Annual Meeting of the American Gas Institute was called to order by the President, Mr. Charles F. Prichard, in the Auditorium of the Elks Hall, at 10 A.M., Wednesday, October 20th, 1909. There were 462 members of the Institute registered as attending this meeting.

The President on calling the convention to order said that the first business was the consideration of the minutes of the last meeting.

On motion of Mr. H. L. Rice the reading was dispensed with and the minutes as printed were approved.

REPORT ON ELECTION OF NEW MEMBERS.

The President—The list of members elected during the past year has been printed and distributed. I would suggest that the reading of these names be dispensed with in the Directors' Report, in order to save time. Unless there is objection, we will proceed in that manner. We are very glad to have so many new members with us. The Directors at their meeting last night voted the privileges of the floor be extended to those gentlemen who have made applications, and on whose applications it is impossible to act until the next regular ballot. If the gentlemen who are here as new members will rise I am sure that the others will be glad to look into their faces. The next thing in order is the reading of the

DIRECTORS' REPORT,

which the Secretary read as follows:

October 20, 1909.

To the American Gas Institute: Gentlemen, the Board of Directors has the honor to submit its Fourth Annual Report, as follows:

Meetings.—Three meetings of the Board have been held during the year, viz.: February 10th and September 2d, both at Headquarters in New York; and October 19th, at the temporary headquarters in the Hotel Pontchartrain, Detroit, Mich.

Beal Medal.—The Beal Medal was awarded to Henry L. Rice, of Aurora, Ills., for the best paper at the American Gas Light Association meeting of 1905, and to W. H. Gartley, of Philadelphia, for the best paper at the American Gas Institute meeting of 1906. This latter medal was struck from a new and very artistic die, made especially for the American Gas Institute.

Committee on Arrangements.—In accordance with By-Law 22, the following Committee on Arrangements for the Detroit meeting was appointed: Irvin Butterworth, Chairman; J. T. Lynn, J. J. Knight, B. O. Tippy, W. T. Barbour, W. S. Blauvelt.

Abstracts.—The publication of the Bulletin of Abstracts has been continued. With about 320 subscriptions, it is now on a self-supporting basis. The thanks of the American Gas Institute are due to The United Gas Improvement Company for furnishing, free of charge, the material for these abstracts.

Membership Committee's Report.—New members were added during the year as follows:

Election of April 1st.

Active	33	
Associate	13	
Junior	13	
	—	59
Transfers from Associate to Active	3	

Election of September 20th.

Active	25	
Associate	19	
Junior	11	
	—	55
Grand total		114
Transfers from Junior to Active	2	

Summary.

New Active members (including transfers)	63	
New Associate members	32	
New Junior members	24	
Active members, September 1, 1908		984
Elected		58
Transferred from other grades		5
		1,047
Died	2	
Resigned	13	
Did not accept	3	
Dropped for non-payment of dues	48	
	—	66
		981
Associate members, September 1, 1908		232
Elected		32
		264
Lost by transfer	3	
Died	3	
Resigned	3	
Did not accept	1	
Dropped for non-payment of dues	8	
	—	18
		246
Junior members, September 1, 1908	92	
Elected	24	
		116
Lost by transfer	2	
Did not accept	3	
Dropped for non payment of dues	5	
	—	10
		106

Present Membership.

Active	981
Associate	246
Junior	106
Total	1,333

The following is a list of new members elected:

ELECTION OF APRIL 1, 1909.—*Active.*

Alrich, H. W., New York City.	Livingston, H., Philadelphia, Pa.
Batten, J. W., Detroit, Mich.	Kingsbury, I. C., New York City.
Booth, W. F., Hammond, Ind.	McCabe, E. F., Lewistown, Pa
Cross, F. L., Detroit, Mich.	McCarthy, J. M., New York City.
Cushman, C. P., Osaka, Japan.	MacIntosh, W. L., New York City.
Dickey, E. D. V., Beloit, Wis.	McMillin, M., New York City.
Dunbar, C. H., Houston, Tex.	Nelson, J. F., New York City.
Franklin, G., New York City.	Palmer, A. J., Jersey City, N. J.
Gerdenier, C.M., Bridgeport, Conn.	Roberts, G. W., Bridgeport, Conn.
Hagg, F. E., New York City.	Okamoto, S., Nagoya, Japan.
Haefelin, J. A., New York City.	Smith, R. H., Albany, N. Y.
Halsey, W. M., Newark, N. J.	Steele, G. W., Catasaqua, Pa.
Henofer, J. P., Jersey City, N. J.	Strobridge, W., New York City.
Hodges, C. H., New York City.	Wakeman, C. E., Glens Falls, N.Y.
Hudson, D. S., Astoria, N. Y.	Whitwell, L. M., Milwaukee, Wis.
Hunter, J. F., New York City.	Wilke, A. C., Milwaukee, Wis.

Associate.

Claiborne, C. H., Baltimore, Md.	Millar, P. S., New York City.
Fritz, H. C., Chicago, Ills.	Newbold, E. S., Baltimore, Md.
Gartley, A., Honolulu, T. H.	Roesler, H. A., Fairmont, W. Va.
Green, A. P., St. Louis, Mo.	Way, J. G., Cleveland, O.
Hodson, H. M., London, England.	White, C., Baltimore, Md.
Hyland, E. F., Detroit, Mich.	Young, N. A., Bolivar, Pa.

Junior.

Barnes, G. J., Philadelphia, Pa.	Paige, C. E., Malden, Mass.
Davis, E. B., Mt. Vernon, N. Y.	Paleske, W. J., Chicago, Ills.
Houston, G.J., San Antonio, Tex.	Peden, H. L., New York City.
Kellogg, R. C., New York City.	Rasch, Wm. T., New York City.
Kingsbury, I. C., New York City.	Von Starzenski, V., Schenectady, N. Y.
Mansfield, J. H., New York City.	Stull, C. R., Chester, Pa.
Nelson, E. A., New York City.	

Transfer Associate to Active Membership.

Dudley, A. D., Syracuse, N. Y.	Welch, J. S., Philadelphia, Pa
Pearson, J. A., Philadelphia, Pa.	

ELECTION OF SEPTEMBER 20, 1909.—*Active Membership.*

Allen, Wm. H., Jr., Detroit.	Martin, E. S., White Plains, N.Y.
Beatty, J. K., Pittsburgh, Pa.	McCloy, W. L., Pittsburgh, Pa.
Bertke, W. A., Pueblo, Cal.	Miller, R. C., New York City.
Bimson, J., Jr., Paterson, N. J.	Mueller, M. E., Astoria, L. I.
Booth, A., Pittsburgh, Pa.	Partridge, W.G., Springfield, Ills.
Burden, W. W., Astoria, N. Y.	Powell, D. A., Madison, Wis.
Collins, J. C., Rochester, N. Y.	Prichard, C. R., Beverly, Mass.
Douglas, J. B., Philadelphia, Pa.	Reed, J. H., Jr., Pittsburgh, Pa.
Hunter, C. W., Chicago, Ills.	Rutledge, F. J., Philadelphia, Pa.
Kowalke, O. L., Univ., Wis.	Sterling, N. J., Astoria, L. I.
Lambert, E. L., St. Charles, Mo.	St. John, J., Madison, Wis.
Lane, J. M., Paterson, N. J.	White, A. H., Univ., Wis.
Leland, E. D., Pittsburgh, Pa.	

Associate Membership.

Bates, F. C., New York City.	Kirchberger, M., New York City.
Buell, W. C., Jr., Providence, R.I.	Lansingh, Van R., New York City.
Caldwell, J. H., Troy, N. Y.	Macbeth, N., Gloucester, N. J.
Dreyfus, E. D., Pittsburgh, Pa.	Mason, J. A., Baltimore, Md.
Foersterling, Dr. H., Perth Amboy, N. J.	McDonald, F., Albany, N. Y.
Franklin, W. B., Philadelphia, Pa.	Sard, R. E., Albany, N. Y.
Hake, E. W., Cincinnati, O.	Schmidlapp, W. H., Cincinnati, O.
	Sheppard, H. R., Philadelphia, Pa.

Sommer, A., New York City. Wardell, C. W., Gloucester, N. J.
Thompson, W., Kalamazoo, Mich. Wilmot, J. E., New York City.

Junior Membership.

Beers, D. N., Fort Wayne, Ind. Lafore, P. J., Philadelphia, Pa.
Durkee, C. C., Knoxville, Tenn. Onderdonk, L. H., San Antonio, Tex.
Gross, H. O., Philadelphia, Pa.
Kellogg, H. B., Mt. Vernon, N. Y. Perkins, M F., Philadelphia, Pa.
King, A. G., Roanoke, Va. Shaw, C. D., Jr., Philadelphia, Pa.
Klug, J. F., Knoxville, Tenn. Stilwell, J., New York City.

Transfer Junior to Active Membership.

Dickey, S. J., Philadelphia, Pa. Milligan, A. L., Chester, Pa.

Library.—A number of important additions to the Institute Library have been made during the past year. Enough volumes of the English *Journal of Gas Lighting* were purchased to make up a complete set from 1873 to date.

Mr. A. B. Slater has recently donated to the Institute a very valuable collection of American, English and Continental gas and other technical journals, technical books, reports and pamphlets. Among them are the early volumes of the *Journal of Gas Lighting*, so that the Library now has a complete set of that *Journal* to date.

Secretary's Report of Sales of Badges.

Badges on hand, Sept. 1, 1908		214
Returned by member resigning		1
Purchased during fiscal year ending		51
To account for		266
Sold during fiscal year	206	
On hand Sept. 1, 1909	60	
		266

Secretary's Report on Proceedings.

	On Hand 9-1-08.	Sent to Members and Exchanges, or Sold.	In Stock 9-1-09.
Volume I	492	235	257
Volume II	287	53	234
Volume III. from printer	1,650	1,360	290

The Report of the Treasurer gave a detailed statement of the business of the Association to August 31, and a supplemental report to end of fiscal year, which resulted in an estimate balance to credit of $4,600.

Report of Trustees Gas Educational Fund.—The Annual Report of the Trustees Gas Educational Fund will be presented at this meeting to the Institute as one of the subscribers to the fund.

The Board recommends that the Institute continue its annual subscription of $350 to the Trustees Gas Educational Fund. The Board has also decided that in the forthcoming volume of the Proceedings there be printed such of the questions and answers as have not been already printed in the volumes of the Institute Proceedings.

Life Membership.—The Directors, in accordance with Section 18 of the Constitution, have admitted to life membership, without dues, Mr. G. A. Hyde, of Cleveland, O.

Illinois Gas Association Papers.—Two papers covering valuable original work have been received from the Illinois Gas Association under the affiliation agreement, as follows:

"Investigation of the Effects of Compression and Transmission on the Candle Power and Heat Units of Manufactured Gas."

"The Comparative Values of Various Coatings and Coverings for the Prevention of Soil and Electrolytic Corrosion of Iron Pipe."

These papers have been accepted by the Technical Committee and Board of Directors, and may be found in full in the Proceedings of the Illinois Gas Association for 1909, to which those interested are referred.

Reports of Committees.—The reports of the Public Relations and Technical Committees have been approved by the Directors, and will be submitted to the members in the course of the meeting.

The reports of the following sub-committees of the Technical Committee have been approved for reading at this meeting:

Calorimetry. J. B. Klumpp, Chairman.
Benzol Enrichment. J. D. Shattuck, Chairman.
Electrolysis. A. G. Glasgow, Chairman.
Unit of Light. A. C. Humphreys, Chairman.
Utilization of Gas Appliances. W. J. Serrill, Chairman.
Standard Pipe Threads. (Delegates.)
Bureau of Information. W. A. Baehr, Chairman.
Wrinkle Department. F. L. Cross, Editor.

Papers to be Read at Meeting.—The following papers have been approved by the Technical Committee and the Directors, and will be read at this meeting:

"Technical and Mechanical Progress in the Gas Industry," Irvin Butterworth.

"Sliding Scale Regulation of Prices and Dividends," Alfred E. Forstall.

"Illuminating Engineering in Its Practical Applications," Norman Macbeth.

"Tar as Applied to the Surface Treatment of Roads," Hervey J. Skinner. Contribution from the Laboratory of Arthur D. Little.

"Vertical Retorts," Walter G. Africa.

"The Development of Oil Gas in California," Edw. C. Jones.

"Sulphur Compounds in Illuminating Gas," Charles J. Ramsburg.

"Identification of Gas Oils," F. E. Park and L. E. Worthing.

"Power Plants for Gas Works of Medium Size," Charles D. Robison.

"Gas in the Modern Kitchen," George W. Thomson.

"Commercialism," Charles M. Cohn.

"The Solicitor," Karl A. Schick.

"Automatic Oiling Meters," T. D. Miller.

"Booster System at Rochester," Frank Hellen.

"Acceptance and Interpretation of Data," Robert O. Luqueer.

In addition to the papers submitted to the Technical Committee, Mr. Chas. D. Lamson has kindly consented to read his paper on "A Pound of Coal," as read before the Society of Gas Lighting, and Dr. Edward P. Hyde will deliver a lecture on "The Relation of Natural Science to the Development of Lighting."

Recommendations.—The Board of Directors recommends that there be appointed by the President, after consultation with the Technical Committee, a representative to attend the meetings of the International Photometrical Commission.

The Board of Directors recommends the following changes in the Constitution, as approved by the Committee on Constitution and By-Laws:

SECTION 9. Strike out the entire section and substitute the following:

"Honorary members shall be proposed by the Directors to the members of the Institute by mailed notifications immediately after any annual meeting, and shall be voted upon by letter ballot at the time of the regular September ballot next following."

Sec. 54. Strike out the entire section and substitute the following:

"The Directors shall meet the day before each general meeting of the Institute, and also on such day between June 1st and September 15th, both inclusive, as may be designated by the President, by notice given at least one week in advance of meeting. Special meetings may be called when the President shall deem it necessary, and the President shall be required to call a special meeting at any time on the written request of 5 members of the Board. Of such special meetings reasonable notice shall be given by special call, in print or writing, specifying the business to be attended to."

SEC. 55. Strike out the entire section and substitute the following:

"The Board of Directors may in its discretion make with any one (or each) of the district and State gas, or gas and electric associations, now existing or hereafter to be formed, agreements for co-operation between the Institute and such associations. Each and every such association with which such agreements are entered into, shall covenant as follows: Not to elect to voting membership any person connected in any way with the gas industry, who is not directly identified with gas or electric interests, within the State or district designated by the name of the association, and to consult with the Institute before undertaking any original work of interest to the gas profession. All original work carried on by an affiliated association under this agreement shall, when completed and accepted by that association, be presented to the Institute for approval, and when so approved shall be incorporated in the Proceedings of the Institute in such form as the Directors shall determine. Each and every such association shall during the continuance of such agreements, be entitled to elect one of its members a member of the Board of Directors of the Institute, the members so elected to be in addition to those named in Section 23, provided that the number of such associated Directors shall never exceed one-third of the total membership of the Board. Should the Board of Directors provide for an executive committee, this committee shall include in its membership one man from each of the affiliated associations as long as the number of such associations does not exceed six. Thereafter there shall be on the executive committee at least six men who are members of affiliated associations and have among them membership in at least six such associations."

All of which is respectfully submitted for the Board of Directors.

CHAS. F. PRICHARD, President.
ALBERT B. BEADLE, Secretary.

The President—You have heard the report of the Board of Directors. What action shall be taken upon it?

Mr. McDonald, Louisville, Ky.—I move that the report of the Board of Directors be accepted and spread upon the minutes. [Seconded and adopted.]

The President—There are several recommendations made by the Board of Directors, which should be taken up one by one. The first is that the Board recommends to the Institute that it continue its annual subscription of $350 to the Trustees of the Gas Educational

Fund. What action will you take upon that recommendation? [Adopted.] The Board of Directors recommends that there be appointed by the President, after consultation with the Technical Committee, a representative to attend the meetings of the International Photometrical Commission. What action shall be taken upon that recommendation? Would you like to say anything about that, Mr. Gartley? [Seconded.]

Mr. Gartley—I want to say that the proposition coming from the International Photometrical Commission gives us one delegate. There are 18 all together, four from Germany, four from England, and four from France, with six scattering. It is held by a number of gentlemen, who are conducting laboratories and looking into photometrical matters, that we, as the members of the Gas Institute—which is the only body that has the privilege of appointing a delegate to that International Commission—should keep ourselves in line with this photometrical work, in order that there may be a convergence of methods instead of a divergence. [Motion adopted.]

The President—The next recommendation is that the Board of Directors recommends the following changes in the constitution:

Striking out the entire Section 9 and substitute the following:

"Honorary members shall be proposed by the Directors to the members of the Institute by mailed notifications immediately after any annual meeting, and shall be voted upon by letter ballot at the time of the regular ballot next following." [Seconded and adopted.]

Another recommendation is in regard to Section 54. Strike out the entire section and substitute the following:

"The Directors shall meet the day before each general meeting of the Institute, and also on such day between June 1st and September 15th, both inclusive, as may be designated by the President by notice given at least one week in advance of meeting. Special meetings may be called when the President shall deem it necessary, and the Presi- shall be required to call a special meeting at any time on the written request of five members of the Board. Of such meetings reasonable notice shall be given by special call, in print or writing, specifying the business to be attended to." [Adopted.]

The other recommendation is in regard to Section 55. Strike out the entire section and substitute the following:

"The Board of Directors may in its discretion make with any one (or each) of the district and State gas, or gas and electric, associations, now existing or hereafter to be formed, agreements for co-operation between the Institute and such associations. Each and every such association, with which such agreements are entered into, shall covenant as follows: Not to elect to voting membership any person connected in any way with the gas industry, who is not directly identified with gas or electric interests, within the State or district designated by the name of the association, and to consult with the Institute before undertaking any original work of interest to the profession. All original work carried on by an affiliated association under this agreement shall, when completed and accepted by that association, be presented to the Institute for approval, and when so approved shall be incorporated in the proceedings of the Institute, in such form as the Directors shall determine. Each and every such association shall, during the continuance of such agreements, be entitled to elect one of its members a member of the Board of Directors of the Institute, the members so elected to be in addition to those named in Section 23, provided that the number of such associated Directors shall never exceed one-third of the total membership of the Board. Should the Board of Directors provide for an Executive Committee, this Committee shall include in its membership one man from each of the affiliated associations as long as the number of such associations does not exceed 6. Thereafter there shall be on the Executive Committee at least 6 men who are members of affiliated associations and have among them membership in at least 6 such associations." [Adopted.]

(To be Continued.)

[Continued from Page 1157.]

PROCEEDINGS, SEVENTEENTH ANNUAL CONVENTION OF THE PACIFIC COAST GAS ASSOCIATION.

Held in San Francisco, Cal., Sept. 21, 22 and 23.

Second Day—Morning Session.

Chairman Cline having announced the opening of the session, Mr. Kuster announced there were

A Couple of Matters

which he thought should have their attention before the regular order was proceeded with. He further said: Our President, George S. Colquhoun, has been ill, as you all know, for a long time, but his heart and soul are with us here in our meeting. I know he is thinking of us every moment, and that he is more interested in the success of this meeting, perhaps, than any other individual save our Chairman, Mr. Cline, and friend Jones. I move that a committee be appointed to draft suitable resolutions of sympathy expressive of our regret at Mr. Colquhoun's inability to be with us, that the committee be empowered to deliver that message in person, and tender it with a handsome reminder in the shape of a basket of flowers. [Seconded by Mr. Bostwick and adopted.]

The Chairman appointed as such committee, Messrs. Kuster, Henderson and Leach. The committee was instructed to hand in the letter prior to its delivery to Mr. Colquhoun so that it might become part of the record.

Mr. Kuster—Another thing: You are perhaps all aware that Secretary Britton will reach Hong Kong to-morrow, at exactly what time I am not prepared to say, but I suggest that a committee be appointed to cable him the fact that we in session are thinking of him, using words that we might express our thought towards him. This I am sure he would appreciate. [Agreed to.]

The Chairman then introduced Mr. T. D. Petch, who read the following paper entitled,

NEW BUSINESS METHODS.

[For the text of the Petch paper, see Journal, *ante*, Oct. 11, p. 865.]

Discussion.

The Chairman—Gentlemen, Mr. Petch's very interesting paper is before you for discussion.

Mr. Valentine—Mr. Petch touched upon one subject in a way that I think was very well taken, and that was the taking of sales of gas appliances away from the hardware merchants and stove dealers. In the southern part of the State, in some of the smaller towns where the gas company does not handle gas appliances, but the hardware men do, in going over the appliances in use one notes that the larger number of them are hot plates. That I think would not be the case if the gas company handled the appliances. Respecting the lady demonstrator, I had an amusing experience a while ago. I was invited to a demonstration made by a lady, in Los Angeles, by-the-way. Naturally, being interested in anything of the kind, I attended. Much to my surprise she was demonstrating on an electric apparatus. All they had consisted of a few little cakes. When I asked why they didn't do any baking, she replied, it cost too much for current.

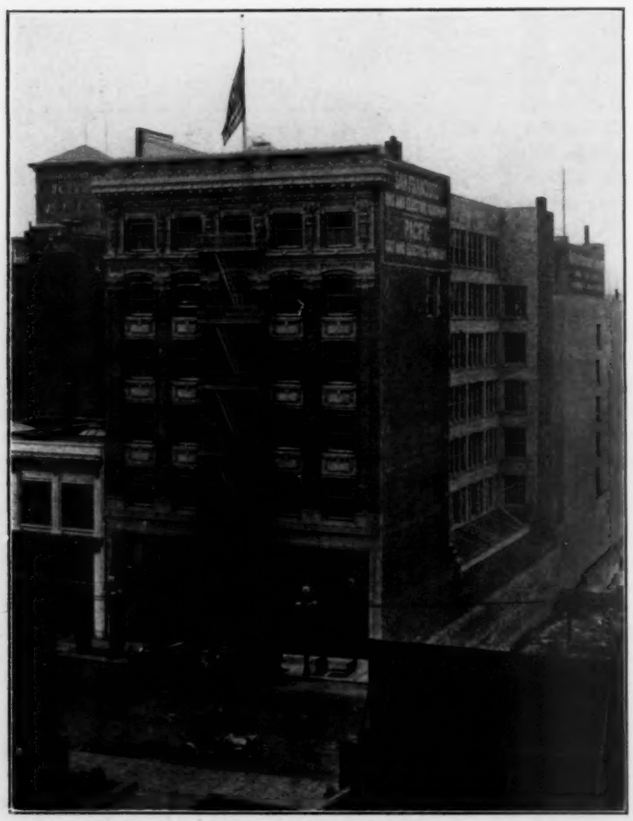
Mr. Petch—Mr. President, regarding my use of the term demonstrator, I did not have particularly much reference to what I call the professional demonstrator, like those who go from town to town giving a series of 5 or 6 lectures, with the idea of educating the people up to the use of gas appliances. As a matter of fact, I am of the opinion that it does not do it. I have attended those lectures and, as a result, I have noticed that about 70 per cent. of the ladies present were the same throughout the entire course of lectures. It was more on the line of a cooking school than on that of demonstrating the appliances for the use of gas. When you have a competent, capable woman—and I think they are very hard to get—who thoroughly understands the gas business and is willing to go from house to house, and not only meet people but talk to them; many times she has to sympathize with the lady of the house (the one who after all we are dependent upon for the sale of our commodity); it seems to me a woman of this kind, as I stated in the paper, can do much to bring about a friendly relation between the company and the consumer. She can explain to them things that a man cannot. Going into the kitchen or the parlor she has access to the house at any time almost; whereas a man cannot have such access. I found out, since we sent out a woman of that type, that our complaints virtually ceased in so far as unjust complaints are concerned. We have complaints of trapped service occasionally, or of naphthaline stoppages, which it is imperative that the company should fix; but the visiting lady puts an end to the unjust complaints, and the kicking against high bills, etc., are stopped. And I admit that I could not stop some of those kickers by any other means. If you send out the ordinary gasfitter, who is usually in touch with his fellow workman, the tendency is to cover up the other fellow's work, but if you send out a woman of this kind she is entirely separate and distinct from the other forces in connection with the company, and she will return the true state of affairs. In this town we found the appliances were in the most deplorable condition, and it was the rectifying of those and the bringing of the fact home to the people, that the fault was not so much with the company as it was with them, that brought about a friendly feeling towards us. We rarely have a complaint now, where we did have 50.

The Chairman—We will now hear from Mr. W. R. Morgan, on

GAS DISTRIBUTION IN SAN FRANCISCO.

The distributing system of San Francisco is the result of about 60 years' growth, and represents the efforts of eight companies that have flourished for longer or shorter periods since the year 1852, when the San Francisco Gas Company was incorporated. Subsequently, the following Companies came into existence:

1862.—The Citizens.
1870.—The City.
1871.—The Metropolitan.
1872.—The Central.
1883.—The Pacific Gas Improvement.
1898.—The Equitable.
1901.—The Independent Gas and Power.



A.—San Francisco Gas and Electric Co., 445 Sutter Street, New Office Building, 1909

All of these Companies have been absorbed by the original San Francisco Gas Company, now known as the San Francisco Gas and Electric Company, which has inherited from them some 300 miles of street mains. Each system has contributed its advantages and defects—its services, valves, drips and leaks. A complete plan of the mains would be practically a street map of the city. Nearly every house is reached by the services, and every gas street lamp is supplied from the mains.

The entire low pressure system is of the arterial type: That is, open from end to-end to the free passage of gas. Considering its haphazard growth and lack of comprehensive design, it is better adapted to its purpose than might be supposed. The various independent lines have been so tied together that individual deficiencies are supplied by the strength and completeness of the whole.

In localities where consumption is greatest two mains are used, one in either side of the street. This double arrangement affords advantages that cannot be secured when only a single main is available; for example, shorter services, greater storage capacity, lighter drag at peak hours, and insurance of uninterrupted service, as either main will suffice temporarily should a stoppage or a serious break occur in the other.

In outlying districts there is a scarcity of large mains, 2-inch and 4 inch being commonly used. Two-inch mains are being replaced gradually with larger sizes, and no more 2-inch pipe is being laid, except in ungraded and unpaved streets, where the number of services to be installed will not exceed 4 or 5. The problem involved is not the theoretical capacity of the main according to Pole's formula, but the great uncertainty regarding its condition after a few years' use. Unless there is a fall of at least 5 per cent. a trap is likely to occur; moreover, 2-inch pipe is easily choked by naphthaline, and a long run is not readily cleared. Invariably such mains have been prolific sources of complaints, and are maintained only as an expense unduly great compared with larger mains.

Fig. 1 shows fluctuations of pressure caused by water in a 2-inch

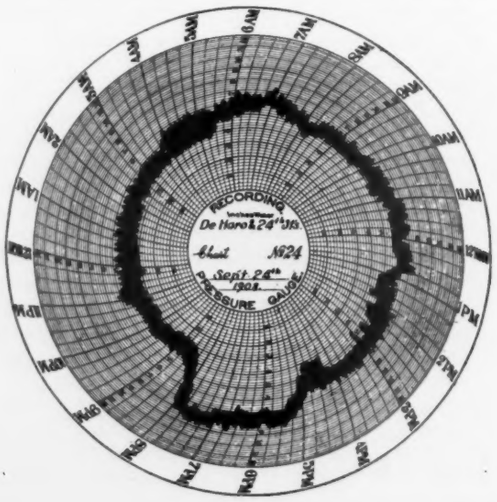


Fig. 1.

main. This record was made in a Bristol recording gauge, placed near the end of a 600-foot run supplying 3 consumers. The amount of water in the main would have been unnoticeable in a 4-inch main.

The city of San Francisco is built upon the northerly end of a narrow peninsula, lying between the Pacific ocean and San Francisco bay. On the north is the well known "Golden Gate," a narrow, picturesque channel, connecting the ocean and the bay.

Fig. 2.—The Golden Gate.

Regarded as a field for gas distribution, the city is appr ximately square, with boundary lines conforming closely to the cardinal points of the compass. The area to be supplied is 36 square miles. Elevations range as high as 450 feet above sea level, and the nature of the soil varies from alluvial deposits and sand to a fairly hard granite. Dividing the area by center lines into 4 equal squares, the northeasterly section is occupied by the business district and western addition, the northwesterly by the Richmond district, the southwesterly by the Sunset and Parkside, and the southeasterly by the Mission and Potrero.

Gas is supplied from Potrero station, located on the Bay shore at about the middle of the easterly boundary. From this point the two principal trunk lines (24 inches and 30 inches) extend westerly and northerly a distance of 4½ miles to North Beach station, on the northerly boundary line of the city.

No gas has been made at North Beach since April, 1906, but a 2,000,000-foot storage holder is still utilized, being filled during the day and gas delivered at night by means of a blower and a compressor.

The northeasterly quarter section includes the original mining town of early San Francisco, where, in 1852, Peter Donohue started his infant gas works, at First and Howard streets. This section is amply provided with large mains well connected, and having a good circulation. Sizes run from 10-inch to 20-inch in the trunk lines, and in

Fig. 3.—Potrero Station.

Fig. 5.—The Western Addition from the South.

Fig. 4.—The Western Addition from the South.

3.—Office Building of the San Francisco Gas Co., at First and Howard Streets, 1851.

turn supplying a gridiron of smaller mains running through every street and alley and connected at every crossing.

Fig. 6.—Market Street from Sixth Street.

Fig. 7.—A few Skyscrapers.

Fig. 8.—Richmond from the South.

Richmond, in the northwesterly corner, has presented a serious problem. Until 1906 this was a sparsely settled district, provided only with 2-inch and 4-inch mains. It is 3 miles from North Beach

station and 6 miles from Potrero. Dead ends were the rule and services were small—mostly 1 inch.

Shortly after the fire the population was increased fully four-fold by an influx of people who had been burned out. Every vacant house was filled and many new houses and stores were quickly built. The combination of small mains, long distance, and sudden increase of consumption, developed a deplorable "no gas" condition. A 4-inch, auxiliary high pressure line, from North Beach station, furnished the principal supply, although with a 14-inch by 16-inch by 12-inch compressor, it was difficult to keep a pressure of 20 pounds per square inch at the station.

Lately the situation has been relieved by the extension of a 12-inch low pressure main, for a distance of 2 miles through Point Lobos avenue (the principal thoroughfare), with direct connection to a 20-inch feeding line. All laterals have been connected, thousands of feet of 2-inch mains replaced with 4 and 6 inch, and many dead ends eliminated. A new 16-inch by 17-inch by 20-inch compressor has been installed, and during peak hours a pressure of 30 pounds is maintained at the station. Two Chaplin-Fulton district governors are located at suitable points and set to keep a pressure of not less than 5 inches in the distributing system. The service now is very satisfactory and complaints have dropped to normal. Figs. 9 and 10 show pressure conditions in Richmond before and after improvements were made.

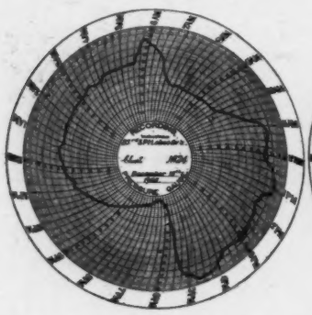


Fig. 9.—Low Pressure, Richmond District. Before Improvements.

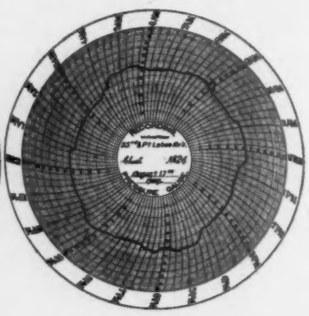


Fig. 10.—High Pressure, Richmond District. After Improvements.

Figs. 11 and 12 show charts taken at the extreme southerly end of a

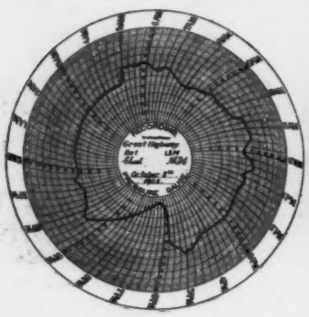


Fig. 11.—Ocean Beach Before Improvements.

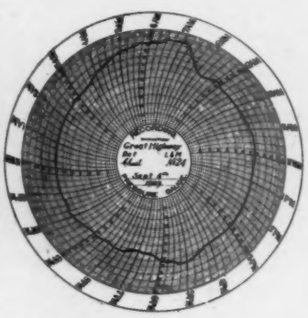


Fig. 12.—Ocean Beach After Improvements.

main extending along the Ocean Beach before and after improvements.

Sloping to the Ocean Beach, south of Golden Gate Park, lie the

Fig. 13.—The Ocean Beach.

Sunset and Parkside districts. The soil here and in Richmond is

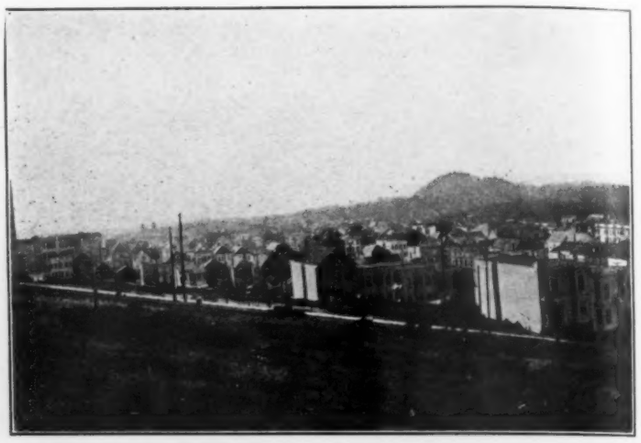


Fig. 14.—Sunset District from the East.

composed of clean, wind-blown sand, which has been swept in from the Beach over barren dunes and piled in shifting drifts and ridges. During the season of the westerly trade-winds, a trench left open at night in any exposed location will be filled with sand and all traces of its existence obliterated before the following morning. Pipe laid in this ground lasts about as long as when stored in a warehouse. Near the Beach, however, unprotected wrought iron pipe is affected by the corroding action of salt and fog.

The Sunset district is supplied by means of a low pressure system,

Fig. 15.—Sunset District from the West.

boosted at peak hours by high pressure from a 2-inch main extended from the high pressure line in Richmond. This main also extends southerly to the newly built settlement of Parkside, which is the only

Fig. 16.—Parkside from the North.

exclusively high pressure district in San Francisco; about 75 houses are supplied by means of ½-inch services, No. 1 Equitable governors, and ordinary 5-light meters. The installation gives less trouble and the district is the source of fewer complaints than any other of equal area in the city.

The Mission is a densely populated, residential district. This and

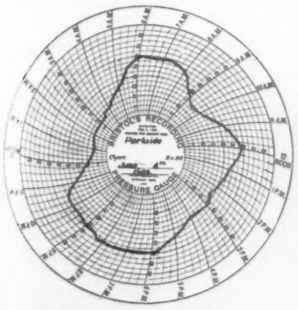


Fig. 17.—Parkside Chart.

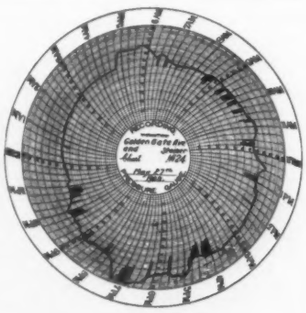


Fig. 18.

Fig. 19.—The Mission from the South.

Fig. 20.—The Potrero from the South.

Fig. 21.—The Mission from the East.

the Potrero in the southeasterly corner are supplied from the 24-inch and 30-inch trunk lines, by 10, 12 and 16-inch feeding mains, and the usual network of smaller mains. Throughout the whole system of cast iron mains, lead joints are used exclusively.

House services vary in diameter from 1 inch up. Nothing less than 1¼-inch has been installed during the past 10 years, although thousands of smaller services (relics of former times) are still in use. Present practice favors generosity in regard to sizes. The constantly increasing use of gas appliances demands 1¼-inch and 2-inch pipe in houses which formerly could be supplied by means of 1 to 1¼-inch. Figs. 22 and 23 show charts taken on services supplying water heaters

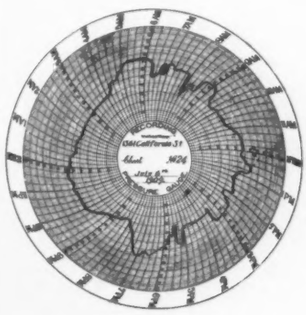


Fig. 22.

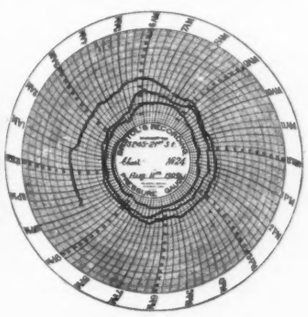


Fig. 23.

in addition to the customary burners for illumination. It has been found advisable in many such cases to install separate services to supply heaters which require a rapid flow of gas. When lights and heaters are supplied from a single service, the irregular demands of the heaters cause quick variations of pressure and flickering lights unless the service is extravagantly large. Two 1¼-inch services are cheaper to install and give better results than a single 2½-inch service.

A 1¼-inch service costs only 10 per cent. more than a 1¼-inch, while the difference in capacity is 40 per cent. The larger service, moreover, has advantages aside from mere capacity. It is not so easily choked or trapped as the smaller sizes; pipe and fittings are stronger; leakage is reduced, and the life of the service lengthened.

During the last few years particular attention has been devoted to the matter of meter locations. It is required in every new building that a suitable place shall be provided for gas meters in the part of the building near the street and not higher than the ground floor, where light and ventilation are good, where the meters may be reached easily by statement takers, where they are accessible in case of fire, and to where the service pipe can be run without elbows, bends or traps. About 200 old services are being overhauled per month and larger pipe installed, bends and drips removed, and meters reset in accordance with the conditions outlined above.

Meters range in size from 3-light to 200-light, including Pacific, Maryland, American, Keystone, Harris, Standard, Detroit, Ohio, Laporte and the Sprague iron meter. Three-light, 5-light and 10-light meters are set with lead connection, all larger than 10-light have iron connections.

The use of 3-light meters is being discontinued in favor of 5-light. Under average conditions the life of a meter is 6 years. If kept in commission for a longer period it is liable to become inaccurate and leaky, or break down altogether. After 6 years' use leather diaphragms are generally dry and hard, the oil having been evaporated, and the meter becomes "slow" or possibly fails to register. To simplify the regular changing of meters they are painted a different color each year. Those set during the year 1904 were painted green; in 1905, blue; 1906, red; 1907, yellow; 1908, dark lead; 1909, cream color. This year all green meters are being taken to the shop for a general overhauling.

Street lamps have 1-inch services and ¾-inch rise pipes. They are provided with Welsbach mantles, which are supplied and cared for by the Welsbach Company under a contract with the Gas Company. Of the 5,000 in use, 340 are "triple tops"—*i. e.*, having a cluster of 3 lamps supported by a single post.

The subject of complaints is the liveliest storm center in all the affairs between a gas company and the general public. This is a remarkable condition, in view of the fact that the desires of the complainants and the interests of the company are identical. However, far apart the principals may be regarding rates, or whatever differences of opinion may exist between them concerning the veracity of a meter, or the equity of a bill, they surely meet on common ground when it comes to the complaint question.

Nine times out of 10 the consumer wants more gas and 10 times out

of 10 the company is eager to accommodate him. The only difficulty hinges upon the ability of the company to furnish a satisfactory supply quickly enough.

A consumer with a complaint is generally saturated with the idea that he is not getting a proper return for his money. He fails to consider that, for a small monthly payment, he enjoys the use of an investment running into millions of dollars, of a plant that is the result of study and experiments extending over a period of more than 100 years, of an organization that is almost military in its discipline and efficiency, the end and aim are to give him continuous service. It is impossible for the company to prevent occasional stoppages. The number of complaints at the most is very small compared with the number of services—seldom amounting to 1 per cent. per day.

At the particular instant a "no gas" wail reaches the office probably not a single pump man is available. It is not practical to keep men lined up waiting for complaints, still they offer the best possible opportunity to make either a friend or an enemy. At such times delay means dissatisfaction to the consumer, with a big by-product of prejudice against the company. In order to get quick quick action in these cases, it has been arranged that a few of the "trouble men" shall telephone to the office for orders while on their rounds, the calls being timed so that one is received about every hour. Thus it is possible to have a complaint investigated and the cause removed within 30 minutes after the message has been received at the company's office.

Ninety per cent. of complaints are on account of poor pressure, caused by naphthaline in service pipes or meter connections. A little gasoline blown through the service with a force pump is sufficient ordinarily to clear the pipe. Particularly stubborn cases require that the services shall be overhauled and thoroughly cleared by mechanical means. Some months ago a 6-inch service supplying a local cannery became badly choked, and was cleared by disconnecting at the main and blowing the pipe out with steam by means of a hose connected to the boiler.

Climatic conditions in San Francisco are particularly favorable for the rapid formation of naphthaline in service pipes and meters that are exposed to the air. From May until October the forenoons are usually warm and clear, followed by a cool sea breeze with banks of fog in the afternoon. The change of temperature is sufficient to affect exposed services and start an avalanche of complaints of poor pressure.

Fig. 23 presents a graphic illustration of formation of naphthaline in a service pipe. Between 6 and 10 A.M. the pressure was reduced 3 inches, conditions becoming steadily worse until gas was practically shut off 48 hours later. Instances have occurred in which only 10 hours elapsed between the commencement of trouble and the final stoppage.

In the congested district of San Francisco street conditions below the surface are somewhat discouraging. From curb to curb, to a depth of from 6 to 10 feet, the space is filled with iron, brick and concrete structures. The street railroad right-of-way covers 18 feet. Into the remaining space is packed telephone, telegraph, electric light and power conduits, with manholes up to 10 feet square, gas and water mains and services, with valves and drips, sewers and manholes, catch-basins and laterals, an occasional steam line, and numerous abandoned pits formerly used in connection with cable railways. In crossings, the city is building water cisterns 34 feet in diameter, and the Gas Company has been politely advised by the City Engineer to remove its mains from the cistern areas.

If by any possible chance a cross is found with an outlet plugged, some foreign company hastens to fit a re-enforced concrete manhole neatly and snugly up against the plug. There is at least one consolation derived by the Gas Company in such a case. We are sure the plug will not blow out.

During the last half century fewer changes have been made in the distributing system than in any part of the Company's plant. The construction of the works, the material used and methods of manufacture have all undergone radical changes; even office methods have been revolutionized. With gas made from a new material, by a new process, and consumed in burners embodying newly discovered principles, the means used for delivery have remained practically the same for a period of 50 years.

In all probability, before the next meeting of the Pacific Coast Gas Association, this apparently unchangeable equipment will have joined the general march of development toward a greater efficiency.

Plans have been prepared for the installation of a 16-inch high pressure main, from Potrero station to North Beach station, designed to carry gas under a pressure of 40 pounds per square inch.

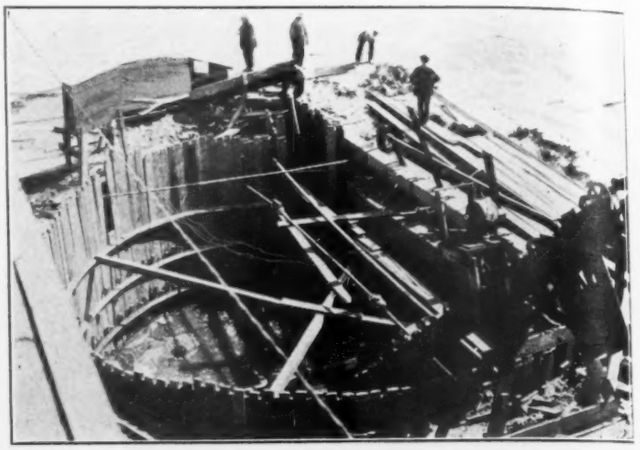


Fig. 24.—Water Cistern in Course of Construction.

Fig. 25.—30-Inch Mains Slung on I-Beams During Construction of Service.

Five district governors are to be located at points from which the Mission, Sunset, Richmond, Western addition and Business district each can be furnished with a supply far in excess of present demands, and this without adding to or materially altering the existing low pressure system. The plan is to change the catenary curve of a long chain to practically a horizontal line by means of equi-distant supports between the abutments. When this has been accomplished peaks will lose their terrors and the increase of gas consumption in San Francisco will be anticipated for fully 50 years to come.

(To be Continued.)

Sketching Rules in Gas Works.

[Communicated by "R."]

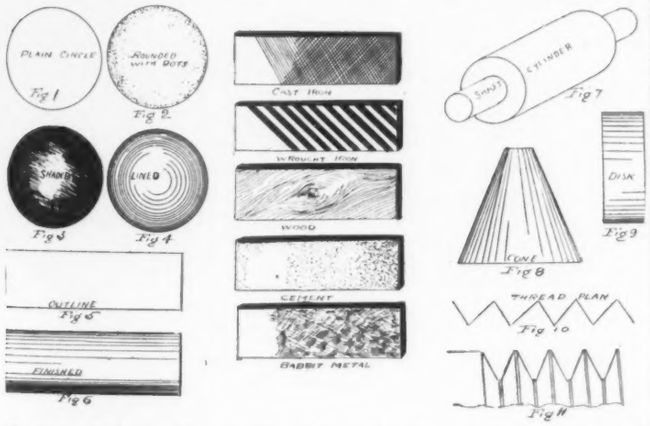
There is always a certain amount of diagramming to be done in gas works. Pipes and pipe connections are to be planned and placed on paper or sketching board in such form that someone else can understand what is wanted by the scale rendered thereon. Gears, pulleys, shafts, cams and various parts of the mechanical division of gas manufacture are to be executed on designs. Sketches are required of boilers, vats, domes, tanks, retorts, etc. In fact, there is every reason for the use of the pen and pencil in the gas works for producing on paper or drawing board some of the parts or devices employed in the manufacture of gas. Or if drawings of buildings are needed there is a large field for the work. In many gas plants there are men whose duties, though laid along the sketching line, yet they are not expert draughtsmen. The skilled architect or the artisan familiar with drawing perfected diagrams of mechanical parts, usually obtains special work in large plants where he can devote all of his time to the designing room; but the average gas plant does not have enough work of this kind to warrant the employ of a thoroughly

fledged sketch-artist at high salary. The result is that the designing of the plant usually falls to one or two of the men specially fitted and naturally talented along this line.

These men may work at other duties, and open their sketching equipment only whenever it is necessary to produce a drawing. Then, again, there are foremen and others in the gas plant who are required to make drawings of machinery and equipments at intervals, in order to put on paper an outline of what is needed. Sometimes the common workman of the plant is placed in a position in which he is required to outline in the rough a form of something he is constructing. Therefore, the sketches herewith presented are made with a view of aiding men called upon at intervals to make some sort of a drawing of a certain part of the equipment of the gas plant.

Circular and cylindrical objects are common. In a drawing recently made by a second hand, who was in charge of a department in the absence of the foreman in a gas plant, the globes which formed a part of the diagram were executed with plain circles, as in Fig. 1. The drawing hardly indicates what was meant. The circle might mean a flat disk, but in order to get the rounded effect the multitude of dots might be put in, as in Fig. 2. It will be noticed that the dots are thicker in volume near the edges of the circle, and there are no dots in the precise middle. This aids in making the circle take a ball effect. Again, some men get the rounded effect by applying heavy shading matter. The ink is simply put in heavily, as in Fig. 3, leaving the center of the circle free. The best way to get the desired effect is by using a series of lines with the compass, as in Fig. 4. You shade off the ball by making the lines wider and wider apart as you get near the middle.

The same principle applies to the drawing in which cylindrical



effects are to be produced. Fig. 5 is a drawing of the outline, and this might be a block or a flat piece as far as appearances are concerned. Yet by putting in the shading lines, one after the other, with the darker and heavier lines near the edges, the rounding-off effect results, as in Fig. 6.

You can get the rounded effect without the shading lines, providing that the ends of the cylindrical parts are finished in circular lines, as in Fig. 7. There is no shading in this cut as can be observed, the rounded effect being purely the result of the effect of the rounded parts at the terminus.

Suppose you may want to get a cone. This can be done very readily, as in Fig. 8; or if a disk is wanted on the plan you strike it off, as in Fig. 9. First your outline and then the serial shading with the ruler edge. A straight-edge can be used with good results. India ink and a crow quill pen are needed for this work. You can execute your thread plan on the diagrams by simply outlining the V-shaped portions, as in Fig. 10, or you can go into it a little deeper by making the threads, as in Fig. 11. In the latter instance more time and work are needed, but you get what looks more like threads than the saw-teeth of the first illustration. It pays in the end to put in the time and work and get good diagrams that someone else can read with freedom.

Puzzling complications of sketches are always a great annoyance to the people who have to make the devices according to the plans. It is quite convenient to have a manner of representing cast iron, wrought iron and other metals or compositions on drawing paper. The writer has looked around among the shops and, while he found that different workmen are accustomed to employ a somewhat different application of the representations of metals, cements, woods, etc., on diagrams, that the total will balance up so as to give something close to the specimens exhibited next. I found that many of the sketchers made representations of cast iron on their diagrams by putting in a double series of cross lines, as shown in the cut thus marked. Wrought iron takes on a barber pole like condition as shown, while wood is made with a series of trailing lines. Cement involves the use of a lot of dots, and babbit metal a collection of angles with the pen and ink.

Iron and Coal Development in Mexico.

Mr. John Birkinbine, Philadelphia, contributes to the Proceedings of the Engineers' Club, of Philadelphia, an interesting paper on the "Industrial Progress of Mexico." It presents much valuable information on various developments in that country in the past decade. Mr. Birkinbine presented before the same Society "Notes on Engineering in Mexico" in 1893. The data in the later paper were gathered in connection with trips in 1905 and 1909. The following extracts are made from the pages which deal with iron and coal, the greater part of the paper being devoted to railroad and hydro-electric development.

The first Mexican journey was through sections then remote from railroads, and the one made a few months ago was distant from both roads and wagon roads, where the crude methods noticed in northern Mexico 27 years ago were found in use in the mountains of Oaxaca. Among these is the ancient Catalan forge, in which iron ore is fed to an open charcoal fire, intensified by blast supplied by trompe, in which falling water entrains air. The bloom made in the fire is wrought under a helve hammer operated by a water wheel, and rewrought into bars or anchovies, which are marketed locally for from 3 to 5 cents, gold, per pound.

Some of the charcoal blast furnaces mentioned in "Notes on Engineering in Mexico" are also active, and the delicate castings from furnaces or iron puddled with pine wood are produced in the manner therein described. In several prominent cities scrap furnaces are operated with fuel supplied by gas producers and connected with rolling mills producing merchant iron, and foundries and machine shops furnish much of the repair and some of the new work required. As a rule, these industries are inclosed to prevent pilfering, and workmen are searched upon leaving the plant.

The Monterey Steel Plant.—At Monterey, in the State of Nueva Leon, a modern iron and steel industry was established in 1901 by the Cia. Fundidoro y Acero de Monterey, S. A. The plant consists of one blast furnace, 18 by 80 feet, one Bessemer converter, three 35-ton open hearth furnaces, one composite mill to roll beams and shapes or rails, a merchant mill, spike works, foundry and machine shop and other accessories.

The blast furnace is fed with iron ores obtained in northern Mexico, the mixture ranging from 57 to 62 per cent. of iron, and closely averaging 60 per cent iron. The coke used is one-half domestic, one-half foreign, and limestone is brought from nearby quarries. The domestic coke is produced from coal mined in the State of Coahuila, 200 miles from Monterey, and for smelting purposes, owing to the percentages of ash and sulphur, is mixed with cokes shipped from the United States and Europe to Tampico, and from thence 322 miles by railroad to Monterey.

Pig iron is cast in sand when not supplied as direct metal in ladle cars to the Bessemer converter (formerly a feature of the Pottstown, Pa., basic Bessemer plant), where it is partly blown, and is then carried by ladle to open hearth furnaces already charged with scrap. This duplex process accelerates the rate of conversion and augments the open hearth output. The cast ingots pass through soaking pits to the blooming and roughing mills, heating furnaces, and then to the composite trains. When visited, the mill, which has a capacity double that of the blast furnace and converting equipment, was running on an order for 20,000 tons of 85-pound open hearth steel rails for the Mexican National railroads.

The general management is by Mexicans and most of the employees are natives, but department heads and many skilled workmen are foreigners. The labor basis at the plant is $1.50, Mexican, per day, equivalent to 75 cents, gold, but the number of employees exceeds that usually found in similar works in the United States. In 1907 nearly 18,000 tons of steel ingots were produced and 30,000 tons of manufactured steel, mostly open hearth.

Coal and Coke.—Practically all the domestic coal produced in Mexico is mined in the State of Coahuila, near the United States

boundary, where about 1,500,000 tons are obtained annually. In 1907 the output of the Coahuila coal fields was 1,265,719 metric tons, about one-third of which was converted into coke. Exploitations have followed the mineral for 4,500 feet on a slope, and a shaft 930 feet deep is in use. The towns, railroads and other improvements, for which these coal deposits are responsible, have transformed a desert country into an industrial center, most impressive to one who first knew the coal as a mere prospect.

The coal costs about $2, gold, per ton to mine, and, owing to the percentage of ash, washing is necessary to prepare it for coking, 20 to 25 per cent. passing away in the tailings; hence, 2 tons of coal as mined are necessary to produce 1 ton of coke, and this product commands about $6.50, gold, per ton at the ovens.

But the fuel requirements of Mexico are more than double the output of the Coahuila fields, and domestic coal and coke compete with foreign fuel at the capital and other centers of consumption on the main plateau. The railroad freight rate from the Coahuila mines to the City of Mexico, 835 miles, is $4, gold; the same amount is charged on foreign fuel carried 264 miles from Vera Cruz, but in the latter case the fuel is elevated from sea level to the capital, 7,500 feet. Fuel is, therefore, an important problem, and one purpose of the recent journey was to inspect prospecting work and reconnaissances in Oaxaca, which for one and a half years have been carried on under the direction of my son and associate, J. L. W. Birkinbine.

This is neither the time nor the place to discuss the details of the exposures made by the use of diamond drills and many exploratory workings in searching for coal and iron ore in the State of Oaxaca. But it may be of interest to state that three bituminous coal basins of considerable extent and large deposits of rich iron ore have been located, and that from one of the fields a dense coal, burning without smoke, is obtained, intimating a close approximation to anthracite. In this coal the volatile matter is low, but as in all Mexican coals, the ash is high.

The Coahuila coals are classed as cretaceous, while the Oaxaca coals are believed to be in the Upper Jurassic formation. As the Oaxaca coals are found at altitudes ranging from 6,000 to 7,000 feet above sea level and within 300 miles of the capital, they offer opportunities for cheap transports as compared with the Coahuila coals mined at an elevation of 1,500 feet and carried over 800 miles to the City of Mexico.

Reconnaissances demonstrate that, notwithstanding the mountainous character of the country, satisfactory railroad routes are obtainable which, besides bringing the Oaxaca coal into market connection, can be extended to the Pacific Coast.

While the mines of Mexico have been the cause of many extravagant statements, the country is rich in mineral, and most of the States are producers of importance. In the paper which this article supplements one of Mexico's great iron ore deposits was described, and a résumé of important mines or quarries would fill many pages of the Proceedings.

In the mountainous sections of Oaxaca and Guerrero covered in the last visit the mines produce gold, silver, copper, lead, antimony and other minerals. One lead smelter visited was equipped with American impulse water wheels working under a head of water of 60 feet and operating American rotary blowers. This smelter was supplied with water jacket and metal tuyeres, and all of this installation had been transported on the backs of animals for 75 miles.

Peopled by a succession of generations, which for centuries have depended upon wood or charcoal made therefrom as fuel, little valuable timber remains, although the Oaxaca Mountains sustain a fair growth of gnarled and stunted trees; the herds of sheep and goats preventing the development of any decided new growth.

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, Nov. 10th, 1909.

Uniformity in the Photometer Room.—Science and Practice as Applied by Messrs. John Wright & Co.—A New Standard of Valuing Gases.

In a practical sense the photometer as a means of testing gas is a thing of the past. Not one consumer in a thousand either knows or cares anything about the illuminating power of the gas. If the supply is satisfactory, he gives no attention to the matter. Candle power and official testers do not interest him. And if the supply is in anyway defective, he says the gas is bad. In either case he relies on his own observation, and not on published official records. But from an academic point of view, the photometer remains the legal standard. In any except our smallest towns, the official examiner still exists and presents his periodical report. And the Gas Companies Protection Association have recently had their attention directed to the anomalous position as between one concern and another, due to the use of several different standard burners, which give different values to the same brand of gas. Some Acts give no clearer definition than an Argand burner "having 15 holes and 7-inch chimney." Prior to 1860, there was no recognized standard burner. In that year the Sugg Letheby standard burner was introduced, being adapted to the quality of gas as supplied in London at that time. About 7 years later Mr. William Sugg brought out his non-corrodible steatite burner, which was largely adopted as a standard under the title of London Argand No. 1. The standard burner was previously made of metal, and liable to alter by corrosion. Later there was the Metropolitan No. 1, and a number of others. These burners not only varied one as against another, but they were respectively suited to one particular quality and rate of consumption. There was nothing of an adjustable character about them. The object in all cases was to do full justice to the gas by developing the greatest amount of light that could be obtained, but at the same time to avoid any complicated laboratory arrangement that could only be satisfactorily used by a skilled operator, and that would be useless to the average consumer. The presumption was that the standard burner would be largely if not generally used by the public at large, but as a matter of fact the Argand make of burner was never in general demand, and since the advent of the incandescent burner, has become practically obsolete. Mr. Sugg alone introduced a series of burners such as the 14-candle standard, the 16, the 18, and so on, and under certain circumstances different size chimneys could be used. In 1906 the London Gas Referees adopted the No. 2 Metropolitan burner, which has an adjustable air supply and can therefore be set to give fair and true results with gases covering a range of 10 to 20 candles. And subsequently the Metropolitan No. 2 has been accepted as the legal standard by over 50 gas companies. After full discussion, the members of the Gas Companies Protection Association were unanimous as to the desirability of having a uniform standard test burner throughout the country, and also as to the suitability of the Metropolitan No. 2 for that purpose. And they have agreed to promote a bill, in the ensuing session of Parliament, that will secure those objects. The preamble of the proposed bill forms an interesting little history of the standard test burner in this country. The need for one uniform standard burner, both for legal and also for experimental purposes, is obvious, and it is equally plain that such standard should be adjustable so as to give full justice either to carburetted water gas, to straight coal gas, or to mixtures of the two in any proportion. It is also obvious that the fetish of 5 cubic feet per hour must be rejected as there is no reason whatever why the operator should be bound down to one uniform rate of consumption. The greater the range of variation in the illuminating power and composition of the gas to be examined the greater the need for a rate of consumption suited to the quality of the gas.

On a previous occasion I have expressed the opinion that manufacturers of gas appliances are in no sense behind the gas industry proper in respect to following up-to-date methods, by which we understand the practical utilization of the most recent advances in technical or commercial science. And this impression was in no sense weakened when, a few weeks since, I had the privilege of visiting the extensive works of Messrs. John Wright & Co., the well-known manufacturers of gas appliances at Birmingham. Any gas company that could secure the stock of gas fires, cookers, radiator stoves, etc., carried by Messrs. Wright, for use in their particular district, would have a fairly busy time in connection with enlargements for the next 12 months. I tried to figure out the annual consumption of gas represented by the cookers alone, at 20,000 cubic feet per annum for each apparatus, but had to give it up. If any shareholder or director is inclined to take pessimistic views as to the future of gas, a consideration of the magnificent way in which Messrs. Wright are putting the best obtainable talent and unlimited capital into their large factory—which covers 15 acres of ground and affords occupation for 1,500 hands, all exclusively engaged in the production of apparatus for consuming gas—would prove an effective cure. Having recently erected a large block of buildings, fitted in the most complete manner as a laboratory for carrying out all manner of physical and chemical tests, Messrs. Wright decided to celebrate the opening of the new rooms

and the establishment of the laboratory department as a distinct and separate section of their business, by inviting a party of gas engineers to inspect the new arrangements in the first place, and to view the whole process of manufacture in the second. The visitors were received by Mr. H. James Yates, Managing Director of the firm, and evidently the moving spirit in connection with the new developments, and under his very capable guidance, with the aid of several assistants, had a most pleasant and instructive time. Every possible attention was cheerfully afforded, and not one of the visitors could fail to get a good general idea of the care and skill required before the finished articles that are such familiar objects to them can be completed. Naturally the new laboratories claimed the first place in the interest of the visitors, because every gas engineer nowadays finds it necessary to run a little show of that sort on his own account, but he does not run an extensive foundry or fitting shop. Messrs. Wright have found the necessity, since the time of commencing business, which to my own knowledge must be 50 years ago, of conducting laboratory and experimental tests in connection with their various departments, but hitherto these have been informal and disconnected in character.

Mr. Yates has now gathered the whole under one roof, and arranged for the keeping of systematic records, conducted with the same care and method as is bestowed on cash transactions. The firm have been fortunate in securing the services of Mr. A. Forshaw, the first student in gas engineering at Leeds University, to take control of the new department. Mr. Yates has outlined some of the work to be done. Research will be made on the combustion of gas under varying conditions of temperature and pressure, and the best methods of utilizing the different constituents of gaseous fuel. Various matters in connection with gas fires, such as the configuration that will secure the maximum of radiant heat and the composition of the best refractory materials, will be taken in hand. A great advance has already been secured in the matter of a proper mixture for iron stove castings that will combine lightness with strength, and further progress will be sought for in this direction, while at the same time a systematic examination will be made of materials purchased or used. The arrangements also include facilities for the most searching examination into the practical capabilities of fires and stoves. Looking round the rooms the principal objects of interest were a recording calorimeter, two 11-cubic foot test gasholders, a very delicate thermostat, that adjusts the consumption of gas according to the temperature of the water or other fluid being heated, and can be set to any desired temperature; a Bone & Wheeler gas analysis apparatus, an excellent arrangement of combustion tubes for organic analyses, with a supply of pure, dry oxygen, a Boys' calorimeter, Referees' sulphur apparatus, etc. A few notes suggested by the subsequent inspection of the foundries and workshops must be reserved for a future occasion.

Messrs. John Wright & Co. are to be heartily congratulated on their enterprise, and as long as firms of this caliber are to be met with, we are not likely to lament the placing of large orders for gas appliances in foreign countries, as we have lately had occasion to do in regard to other important apparatus in connection with manufacture of gas. It is to be hoped that not only managers of gas works, but manufacturers of all kinds in connection with our industry will not fail to appreciate and to act upon the lesson afforded by the visit to Birmingham.

I have recently been looking over some interesting data in connection with the gas producing properties of certain carburetting oils by the medium of water gas plant, and used in conjunction with coke. Since the oils are of local origin the comparative tests are of local interest only. But in passing we may remark that of the five samples tested the specific gravity at 59° F. ranged from .859 to .878, and the mean gross calorific value was 520–554 B.T.U. The photometrical value is not stated. The consumption of oil was about 3 gallons, and coke about 33 pounds per 1,000 cubic feet of gas produced. In addition, the consumption of fuel is calculated out in terms: One million B.T.U. in the gas, and this unit appears to be a very useful one for practical purposes and for comparison in these days when the calorimeter stands higher in respect to practical utility than the photometer. The new standard brings out an advantage of 10 per cent. in respect to one particular sample. But I like the idea of recognizing the practical value to the customer rather than the bulk of the gas supplied to him. A great deal may be said in respect to the quality of the article that is best suited to the consumer, but in a broad sense the cheapest gas is not the one that sells at the lowest price per 1,000 cubic feet, but the one that is sold at the lowest price per million B.T.U.

Meeting Times of the Various Gas Associations.

American Gas Institute.—Annual meeting, October, 1910. Atlantic City, N. J. Officers: President, Wm. H. Bradley, N. Y., City; Secretary, A. B. Beadle, 29 West 39th street, N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1909. Hamilton, Ont. Officers: President, J. S. Norris, Montreal, P. Q.; Secretary and Treasurer, A. W. Moore, Woodstock, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1910. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Guild of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March 18, 1910, Chicago, Ills. Officers: President, E. G. Schmidt, Springfield, Ills.; Secretary-Treasurer, C. B. Strohn, Elgin, Ills.

Illuminating Engineering Society.—Annual meeting, January 14, 1910. Meetings of Sections, monthly. President, W. H. Gartley, Philadelphia, Pa.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 227 Fulton street. New England, Secretary, L. D. Gibbs, 39 Boylston street, Boston, Mass. Philadelphia, Secretary, G. R. Hemminger, Broad and Arch streets. Chicago, Secretary, G. H Jones, 139 Adams street.

Indiana Gas Association.—Annual meeting, January 19, 1910, Indianapolis, Ind. Officers: President, J. W. Dunbar, New Albany, Ind.; Secretary-Treasurer, Philmer Eves, Indianapolis Gas Company, Indianapolis, Ind.

Iowa District Gas Association.—Annual meeting, time, June 23, 24, 25, 1910, Sioux City, Ia. Officers: President, Geo. H. Waring, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ——— ——— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, September, 1910; ——— ——— ——— Officers: President, B. O. Tippy, Grand Rapids, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 14, 15 and 16, 1910; Jefferson City, Mo. Officers: President, W. A. Bixby; Secretary and Treasurer, C. L. Clary, Sikeston, Mo.

National Commercial Gas Association.—Annual meeting, Dec. 14-22, 1909; New York, Officers: President, J. D. Shattuck, Chester, Pa.; Secretary-Treasurer, Lucius S. Bigelow, 106 Fulton street, New York City.

Natural Gas Association.—Annual meeting, May 17, 18 and 19, 1910; Oklahoma City, Okla. Officers: President, William H. McKenzie, Kansas City, Kas.; Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, third Wednesday in February; Boston. Officers: President, Walter G. Africa, Manchester, N. H.: Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Electric Light, Railway and Gas Association.—Annual meeting, May 18, 19 and 20, 1910; Oklahoma City. Officers: President, F. H. Tidman, Oklahoma City, Okla.; Secretary-Treasurer, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, ——— —, 1910, Los Angeles, Cal. Officers: President, W. B. Cline, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 925 Franklin street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April 13, 1910, Easton, Pa. Officers: President, E. G. Holzer, Easton, Pa.: Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, Dec. 9, 1909; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 1123 Broadway, New York.

Southern Gas Association.—Annual meeting, Feb. 16, 1910, Chattanooga, Tenn. Officers: President, R. C. Congdon, Atlanta, Ga.; Secretary-Treasurer, James Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. ——— ———, 1910, Beaumont, Tex. Officers: President, R. B. Stichter, Dallas, Tex.; Secretary's office, 300 Commerce street, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 11 and 12, 1910, Milwaukee, Wis. Officers: President, R. B. Brown, Milwaukee, Wis.; Secretary-Treasurer, H H. Hyde, Racine, Wis.

Items of Interest
FROM VARIOUS LOCALITIES.

THE authorities of Paterson, N. J., and the representatives of the Public Service Corporation of that section of the State, have entered into an agreement for the public lighting of that city, in so far as that lighting is carried on by means of gas, for a period of 5 years, from July this year to July 1, 1914. The authorities agree to take not less than 350 lamps at any time during the life of the contract, to be paid for under these terms: Ordinary open flame lamps, $18 per annum each; lamps of the Welsbach type, $30 per lamp, per annum. The Company agrees to maintain, clean, light and extinguish the lamps, and the table calls for 3,870 hours of lighting.

THE only local representative of the Clinton (Ills.) Gas and Electric Light Company, in so far as executive position goes, is the Manager, Mr. Albert Sandt. He is also on the Board of Directors.

SUPERINTENDENT HART, of the Lee County (Ills.) Lighting Company, is our authority for the statement that, when he is through with the betterments now underway, his Directors will have a plant up to every requirement that may be made of it.

MR. FRANK E. CURTIS, after many years of faithful and successful stewardship as Manager of the North Adams (Mass.) Light Company, has resigned. Other resignations from the erstwhile faithful adherents of Col. Richardson are Messrs. Daniel Hathaway, Jas. C. Turner, E. M. Hoag and W. B. Green. 'Tis true these were humble men; but they were faithful ones.

MOST of the apparatus that went to make up the local artificial gas plant at Fostoria, O., which was operated under the title of The City Heat and Light Company, will be set up in the plant at Waynesboro, Pa. It looks to us that Superintendent Bailey, of the latter-named place, will have to draw largely upon his store of ingenuity when he engages to piece together the Fostoria flotsam.

LATE last month the United States Circuit Court of Appeals affirmed the decision of Judge Lacombe in the test case brought to determine the holder of unpaid balances of money for rebate payments under the operation of the 80-cent gas rate act of the New York Legislature. The decision was that the Companies may retain these monies, under sufficient bond, for a term of 6 years, at the termination of which period the unreleased funds shall become solely the property of the Companies. A test case was made upon the application of the Northern Union Gas Company, which had a considerable balance of the suspended money, after all claimants who presented their vouchers had been paid. The Company claimed that it should be allowed to retain the money, which contention was met by the City of New York that it should be held in the custody of the Court. Now the Circuit Court of Appeals holds that the city, having no grievance of its own, has no standing in Court to represent tardy claimants, and, therefore, rejects in its entirety the city's assertion that the unclaimed balances should be held in a designated depository for 10 years and then be paid over to the United States. Just what this sum will be no one knows exactly, but it is likely that altogether $400,000 or more of the gas rebate money will not find its way into the pockets of the consumers who paid the $1 rate.

"H.," WRITING from Washington, D C., under recent date, says: "I find no mention in the JOURNAL of the annual supper of the Employees' Beneficial Association of the Washington Gas Light Company. Let me imform you it was a most enjoyable affair (as it always is, in fact), and was in fitting keeping with its objects, which are in the main to promote good fellowship and to provide relief for its members who may be afflicted by death or sickness in their families. Invitation was by card, and each member was allowed to invite some fellow employee that had not yet joined the Society, with a view of convincing the intruders of the advantages and benefits that accompany membership. The talent who assisted in the stagework were right up to their work; and it would have done you (or anyone else for that matter) good to listen to some of the 'old ones,' who have given the best days of their lives to the Company, singing heartily the songs of their youthful time. The Association has done much good to and for its members, and will continue so to do, for which fortuitous result no small share of thanks should go to the great assistance, of a decidedly practical nature, that comes from the business methods of Manager Hart, and of the true co-operatiou of Senator McLean."

GENERAL SUPERINTENDENT BARKER, of the Denver (Col.) Gas and Electric Company, recently issued to every employee of the Company a slip of paper so arranged that it could be readily pasted in their headgears. On the slip this matter is plainly printed:

"First: The principle that underlies courteous treatment of others is simply that of doing unto others that you would have them do unto you.

"Second: In a business such as ours, which in some departments is somewhat complex, you must bear in mind that, although you may be familiar with all matters pertaining thereto, most of the public is not. So don't be snappy with anybody who asks you many questions. Answer them as affably as you know how and make your explanations clear. If you can possibly help it don't let them get away with a frown.

"Third: The way you talk and your manner when speaking are most important. A gracious bearing is easy of cultivation and usually calms the wrath of a consumer who comes to you with a grievance. Go out of your way to adjust any kind of a complaint.

"Get out of the habit, if you have it, of judging a man by his dress. Every man or woman having an account with us deserves the best treatment we can accord them and all others coming into our office should be extended every attention.

"You should remember that we are a public service corporation and for that reason the public has a right to expect more marked courtesy from us than from a private concern. And, besides, it pays. It pays because you make many friends personally and as a representative of the Company. It pays because you rub off a whole lot of friction between the Company and the public. It pays you to treat the public as well as you know how, because the management will think more of you for doing this. The personal satisfaction should be great to you, because you have the knowledge of having done the right thing. It is our earnest wish that every employee make an effort at all times to win and hold the favor of the public."

"B. L.," writing from La Porte, Ind., under date of the 18th inst., said: "Mr. A. C. Rogers, formerly of La Porte, has succeeded Mr. Fred. Hanchet as Superintendent of the La Porte Gas Company."

Mr. H. L. DOUGHTY, of Poughkeepsie, N. Y., has been appointed to a responsible position with the Central Union Gas Company, New York City.

MR. FREDERICK TUDOR has resigned the position of Secretary to the Massachusetts Gas Companies. His successor is Mr. E. F. Paige, of Philadelphia. Mr. Page is a well known coal expert.

"DEAR JOURNAL: As you were the first outside publication to report anything about the originating of the Maquoketa Light and Heat Company, perhaps you would like a line or two more at this time respecting the progress that has been made in this thriving Iowa settlement on that account. Like all things material in which Mr. Courtland Young interests himself, this venture has made good, on both public utility and private inves ment accounts—he and his brother certainly deserve good fortune, for there is nothing of the miser in either. However, the Gas Machinery Company having furnished a plant that was up to contract, and the Company itself having put in an initial main system that was quite up to a beginning satisfactory to the people and to itself, the owners came together and formed a new corporation, which was made on the following basis: The Company is now entitled the Maquoketa Light and Heat Company and its capitalization was fixed at $100,000. The following official management was named: President, Courtland Young; Vice-President, Thos. Crawford; Secretary, A. L. Schuyler; Treasurer, E. A. Young. At the rate the output is increasing it will not be long when Superintendent J. P. Smith will have to advise his employers to go into the market for additional apparatus.—S. S. B."

AT the annual meeting of the Buffalo (N. Y.) Gas Company the following Directors were elected: Robt. L. Fryer, Wm. W. Randolph, Robt. C. Pruyn, F. D. Locke, H. Seligman, H. L. Clark, Stephen Peabody, Emile Gilleadeu, L. L. Babcock and William S. Riselay.

MESSRS. J. G. WHITE & Co., Incorporated, announce the opening of a branch office in Chicago. It is in premises occupied by the First National Bank, and Mr. Charles T. Murdock will have the management thereof.

"AT a farewell dinner given in honor of Mr. Clark R. Graves, formerly Hotel Representative of the Detroit City Gas Company, he was presented with a beautiful walr us leather travelling bag, as a memento of the good feeling and well wishes of his former associates in the New Business Department of the Company. Mr. Ewing made the presentation speech, which was in that eloquent gentleman's best vein. Mr. Graves joined the Detroit Company's forces, September

15, 1905, when the Company was in its old business quarters on Woodward avenue. He leaves Detroit at once to assume charge of the new business division of the combined companies at Atlantic City, N. J.

MR. BRADLEY B. SMALLEY, for many years President of the Burlington (Vt.) Gas Company, died at his home in that city the evening of Saturday, November 6th. He was virtually in his 74th year, having been borne in Jericho, Vt., November 26, 1835. He was one of the most prominent democrats in Vermont, and was appointed Collector of Customs for the State of Vermont during Mr. Cleveland's presidential terms. He was quite prominent, too, in a business way, for besides his connection with the Burlington Gas Light Company, he was President of the Baldwin Refrigerator Company, President of the Burlington Trust Company, and was prominently concerned with the railroad enterprises of his native State. His immediate survivors are his widow, a daughter and a brother. He was a typical Vermonter of the type *noblesse oblige*, and was noted for those qualities that go to make up the man who is valuable to his fellows.

THE Watson-Dunn interests in the properties of the Fullerton (Cal.) Gas Company have been nominally purchased by Mr. J. R. Carhart. The offices of the concern have been removed to Fullerton.

"W. A. B." is informed that the officers chosen at the last annual meeting of the Bay State Company (Wilmington, Del., 16th inst.) were: President, T. W. Lawson; Vice-President, J. Frank Allee; Secretary, E. A. McSweeney; Treasurer, W. Harry Miller.

"DEFIANCE, O., has a set of rulers whose ways are wearisome. Some days ago (to be precise, the 17th inst.) the Defiance City Council asked for the submission of bids, the outcome of the bidding to be an award for the public lighting of that place for one year; but the Council further provided that no bids in excess of $1 per 1,000 for gas or 8 cents per kilowatt for electrical current would be considered. Talk about strings to an offer or an invitation to bid! Ropes look to be nearer than strings to the holding reins of the Defiance Councilmanic body. However, the Defiance Gas and Electric Company, which would seem to be the logical body to undertake the proposed work, in that it is the only artificial lighting supplier in the city, declined to submit prices. The refusal was based on the fact that the Company could not perform the work at a profit and accept the maximum figures named as the governing ones. Whereupon the newspapers next day came out in 'scare heads' mainly to the effect that Defiance was being defied! Hooray! Hooray!!—B. R. M."

IT may be noted as an accomplished fact that the following Companies have been acquired, and will hereafter be operated by the American Gas Company, of Philadelphia—these Companies are all actively engaged in business in the named Pennsylvania places: Suburban Gas Company, Philadelphia; Jenkintown and Cheltenham Gas Company, of Jenkintown; Peoples Gas Company, of Pottsville; North Penn Gas Company, Coatesville Gas Company and the Huntingdon Valley Light and Power Company.

MR. GEORGE BULLOCK, President of the United Gas and Electric Company, which corporation controls the gas and electric lighting interests of the Pike's Peak district in Colorado, speaking recently of the state of trade in artificial lighting respects of that section, said: "We expect to give the people of Colorado Springs and Colorado City the best possible service, and to do that we shall continue to spend money to keep up with their growth. Between $40,000 and $50,000 will be expended by the beginning of summer in replacing small mains with larger ones and in catering to the needs of those portions of the city which are fast growing. In Ivywild and other parts of Colorado Springs and in Colorado City we expect to place the greater part of our money."

THE City Council of Valley City, N. D., has ratified and accepted the provisions of the franchise under which the projectors of the Minneapolis (Minn.) Gas Installation Company propose to operate in the first named place.

MR. W. E. HASWELL, Secretary and General Manager of the Hall Gas Engine Company, Bucyrus, O., has been appointed Chief Examiner of Stationary Engines for the State of Ohio, vice Mr. W. E. Kennedy, resigned.

AT the annual meeting of the Milford (Pa.) Gas Company the officers elected were: President, H. B. Reed; Vice-President, P. N. Bournique; Secretary, Theo. Baker; Treasurer and Superintendent, H. Wohlbrandt.

THE plant at Clinton, Ills., is to be reconstructed, and the Company (Clinton Gas and Electric) has been reorganized. Its President is Mr. A. B. Beadle, of New York, and its Secretary and Treasurer is Mr. Chester Snyder, of Easton, Pa.

IT is said that the Aero Club, of St. Louis, is in the market for the necessary apparatus wherewith to manufacture hydrogen gas on a large scale in that city.

MR. GEORGE WEHRLE, since 1904 Superintendent of Distribution to the Chattanooga (Tenn.) Gas Company, has resigned to accept a similar position with the Denver (Col.) Gas Company. His last night with the former Company was punctuated by a "possum supper," tendered him by the men who served under him so faithfully and well. The guests numbered 24.

PUBLIC LIGHTING TABLE.

DECEMBER, 1909.

Table No. 1.
FOLLOWING THE MOON.

Day of Week.	Date.	Light.	Extinguish.
Wed.	1	5.10PM	9.50PM
Thu.	2	5.10	11.00
Fri.	3	5.10	12.00
Sat.	4	5.10LQ	1.00AM
Sun.	5	5.00	2.00
Mon.	6	5.00	3.00
Tue.	7	5.00	3.50
Wed.	8	5.00	4.50
Thu.	9	5.00	6.10
Fri.	10	5.00	6.10
Sat.	11	5.00	6.10
Sun.	12	5.00NM	6.10
Mon.	13	5.00	6.10
Tue.	14	5.00	6.10
Wed.	15	5.00	6.10
Thu.	16	5.00	6.10
Fri.	17	8.30	6.10
Sat.	18	9.40	6.10
Sun.	19	10.50FQ	6.20
Mon.	20	11.10	6.20
Tue.	21	1.20AM	6.20
Wed.	22	2.30	6.20
Thu.	23	3.50	6.20
Fri.	24	5.00	6.20
Sat.	25	No L.	No L.
Sun.	26	No L.FM	No L.
Mon.	27	No L.	No L.
Tue.	28	5.10PM	7.30PM
Wed.	29	5.10	8.40
Thu.	30	5.10	9.40
Fri.	31	5.10	10.50

TOTAL HOURS DURING 1909.

By Table No. 1.

	Hrs.Min.
January	212.20
February	183.40
March	173.00
April	151.10
May	144.10
June	138.50
July	145.40
August	160.30
September	180.00
October	201.00
November	216.30
December	233.40
Total, yr.	2140.30

PUBLIC LIGHTING TABLE.

DECEMBER, 1909.

Table No. 2.
NEW YORK CITY.
ALL NIGHT LIGHTING.

Day of Week.	Date.	Complete Lighting in One Hour	Complete Extinguishing in 50 Minutes
		From Time Given	
		P. M.	A.M.
Wed.	1	4.07	5.52
Thu.	2	4.07	5.52
Fri.	3	4.02	5.57
Sat.	4	4.02	5.57
Sun.	5	4.02	5.57
Mon.	6	4.02	5.57
Tue.	7	4.02	5.57
Wed.	8	4.02	5.57
Thu.	9	4.02	5.57
Fri.	10	3.57	6.07
Sat.	11	3.57	6.07
Sun.	12	3.57	6.07
Mon.	13	3.57	6.07
Tue.	14	3.57	6.07
Wed.	15	3.57	6.07
Thu.	16	3.57	6.07
Fri.	17	3.57	6.17
Sat.	18	3.57	6.17
Sun.	19	3.57	6.17
Mon.	20	3.57	6.17
Tue.	21	3.57	6.17
Wed.	22	3.57	6.17
Thu.	23	3.57	6.17
Fri.	24	4.02	6.22
Sat.	25	4.02	6.22
Sun.	26	4.07	6.22
Mon.	27	4.07	6.22
Tue.	28	4.07	6.22
Wed.	29	4.07	6.22
Thu.	30	4.07	6.22
Fri.	31	4.12	6.27

TOTAL HOURS DURING 1909.

	Hrs.Min.
January	428.30
February	358.15
March	353.10
April	298.10
May	263.20
June	234.45
July	248.30
August	278.00
September	311.25
October	370.05
November	397.40
December	438.35
	3980.25
Deduct on account of 50 min. extinguishing time	30.25
Total, yr.	3950.00

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. UNNINGHAM,
ELBERT ALLENDER,
EDITORS.

CHARLES H. WADELTON,
MANAGER.

MONDAY, NOVEMBER 29, 1909.

The Market for Gas Securities.

The quotations for Consolidated gas, as between the two last weeks, go to show that investors in it have slight need for fear respecting its future progress. It might be well also to remember in this connection that a net gain of 7 points for the week was made in the face of a weak general market and an increase in interest rates. The opening in it to-day (Friday) was made at 149⅝ to 149¾, and the feeling was decidedly bullish. Brooklyn Union also showed a rise in quoted values.

The out-of-town situation is as before; the bond market being quite active. The New Haven (Conn.) Gas Light Company will convert into stock, on January 1st, $500,000 "Series C," convertible bonds. This is anticipatory of the original purpose to issue the initial call some time in 1910.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

NOVEMBER 29.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$73,177,000	100	149⅝	149¾
Central Union Gas Co. —				
1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	2,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	145½	146
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	999,650	500	130	—
Out-of Town Companies.				
Bay State	50,000,000	50	1	1⅛
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	73	73½
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75¼	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	50
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104⅜	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000		112	113½
" Bonds, 5's	10,000,000		105	106¾
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	4,650,000	—	104½	105
Jackson Gas Co.	240,000	50	82	—
" 1st Mtg. 5's	200,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	104	105
Preferred	2,500,000	100	—	98
Bonds	10,000,000	1,000	104	—
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	75⅝	76
Preferred	25,000,000	100	89½	90
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	113½	114
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104⅜	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	100	102
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	104
Washington (D. C.) Gas Co.	3,600,000	20	337	340
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	230	—

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New advertising, or changes in standing ads., to assure attention the issue following their reception, must be in hand on Wednesday.

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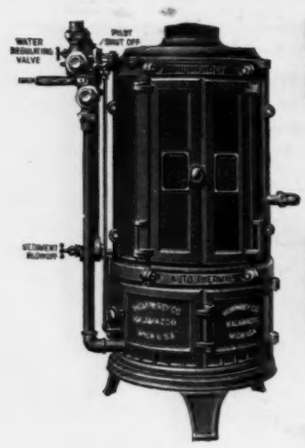

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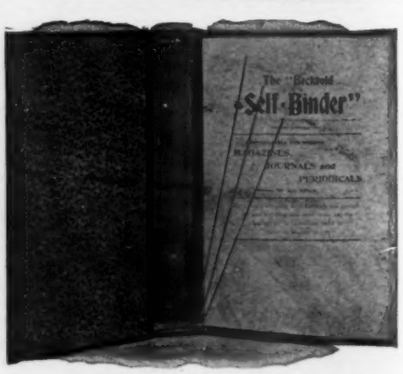

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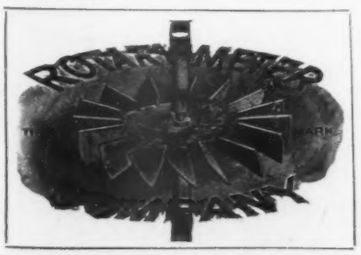

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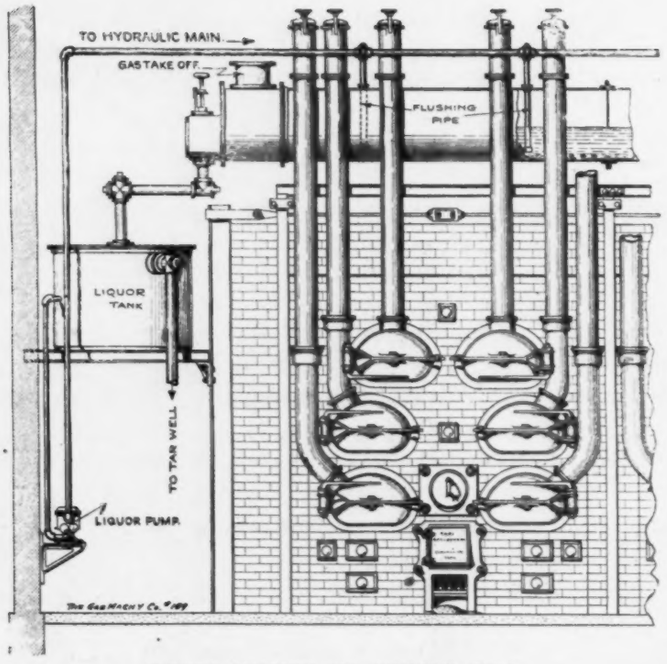

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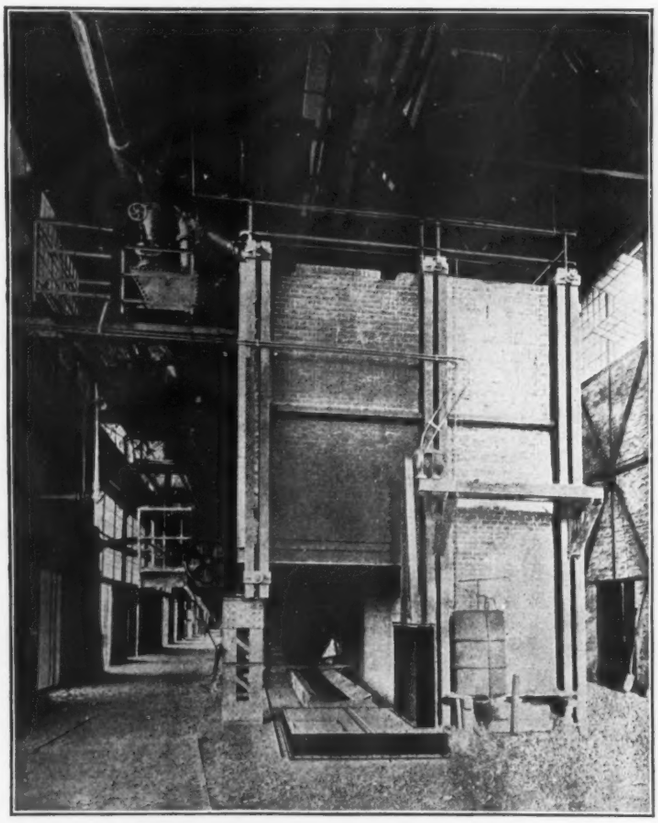

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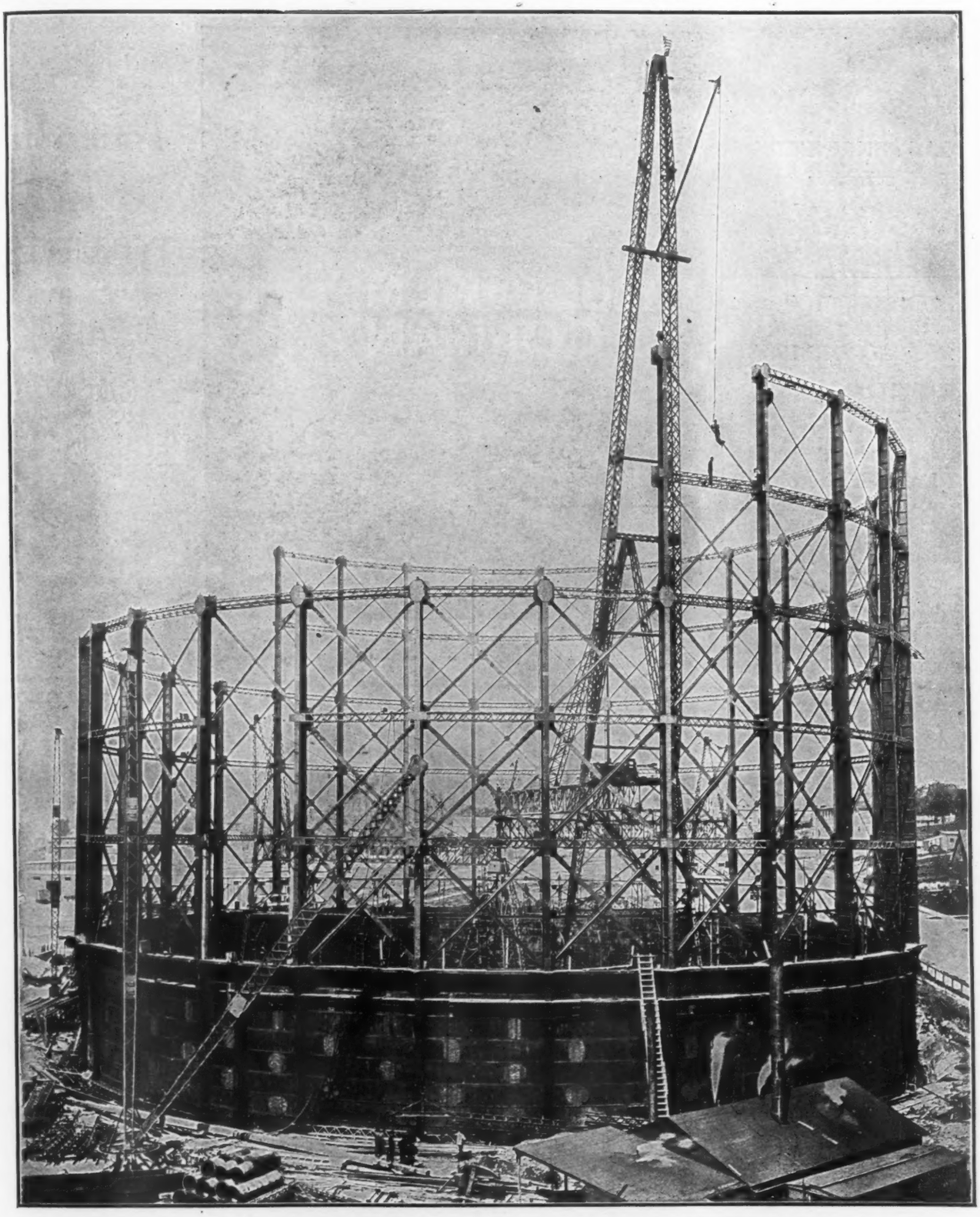

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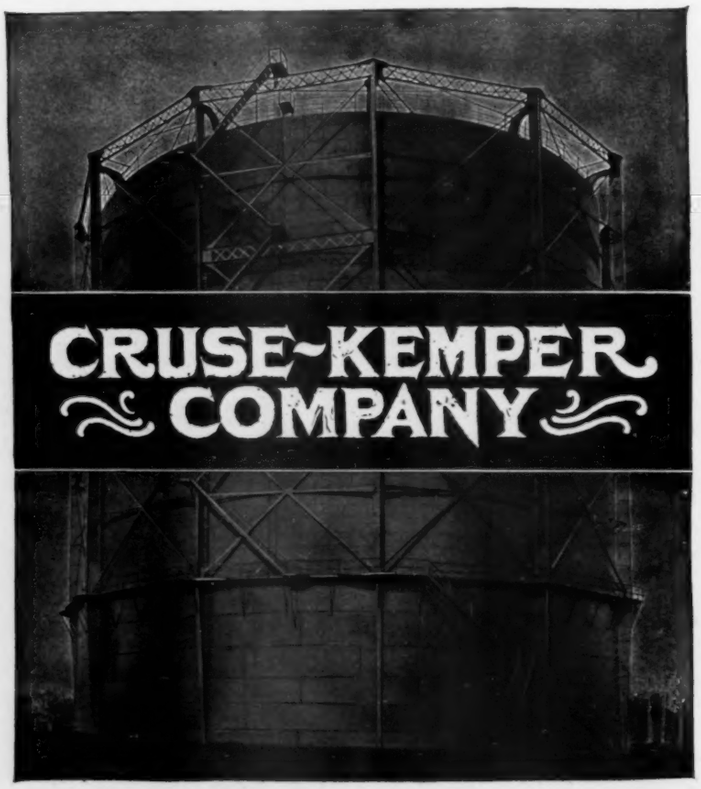

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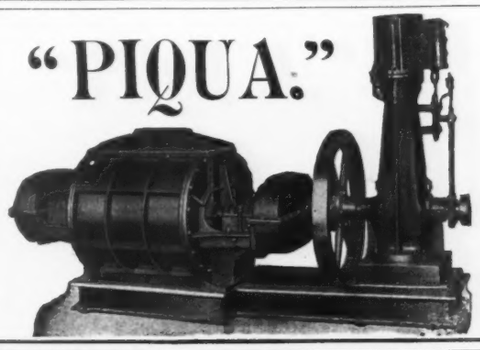

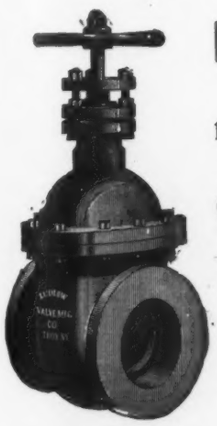

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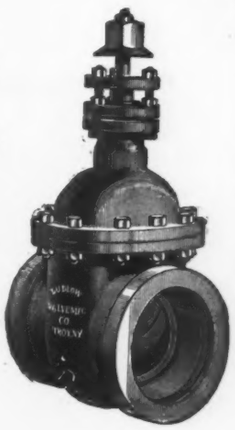

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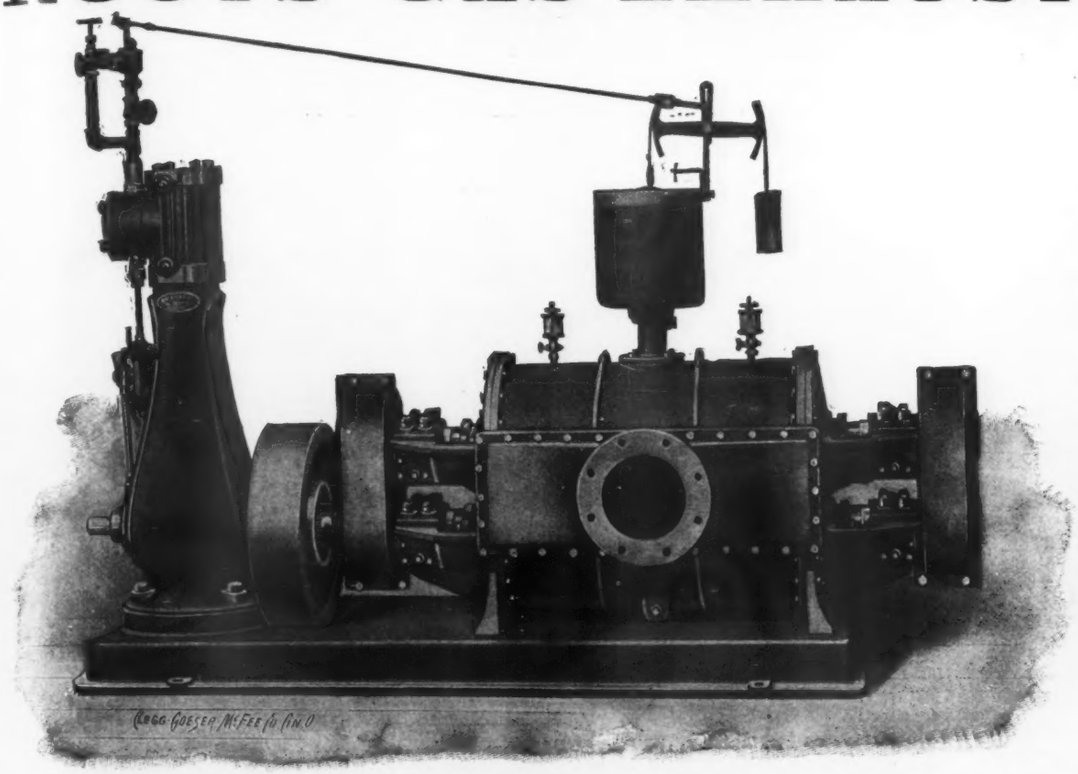

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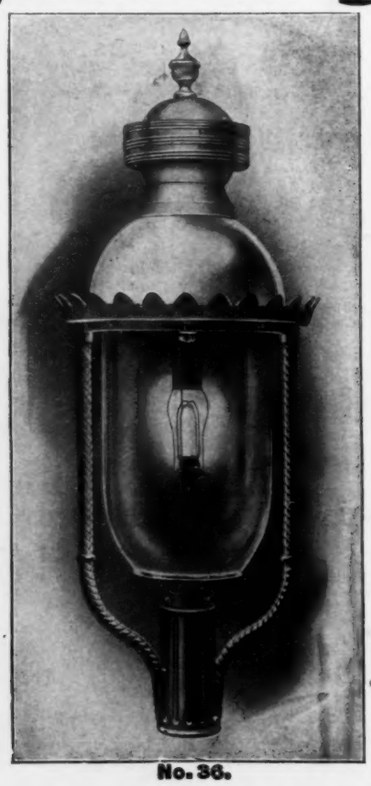

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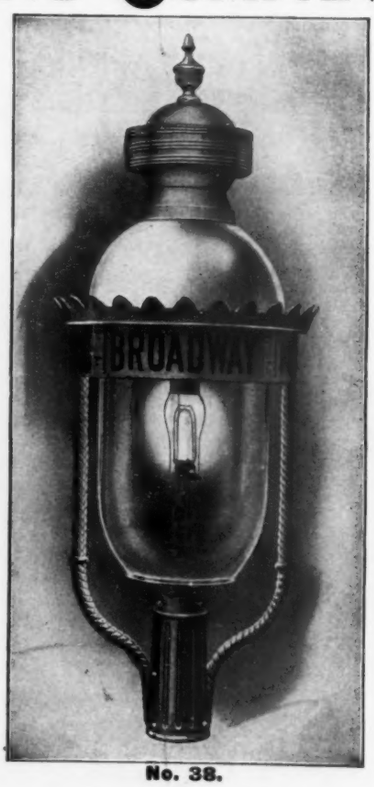

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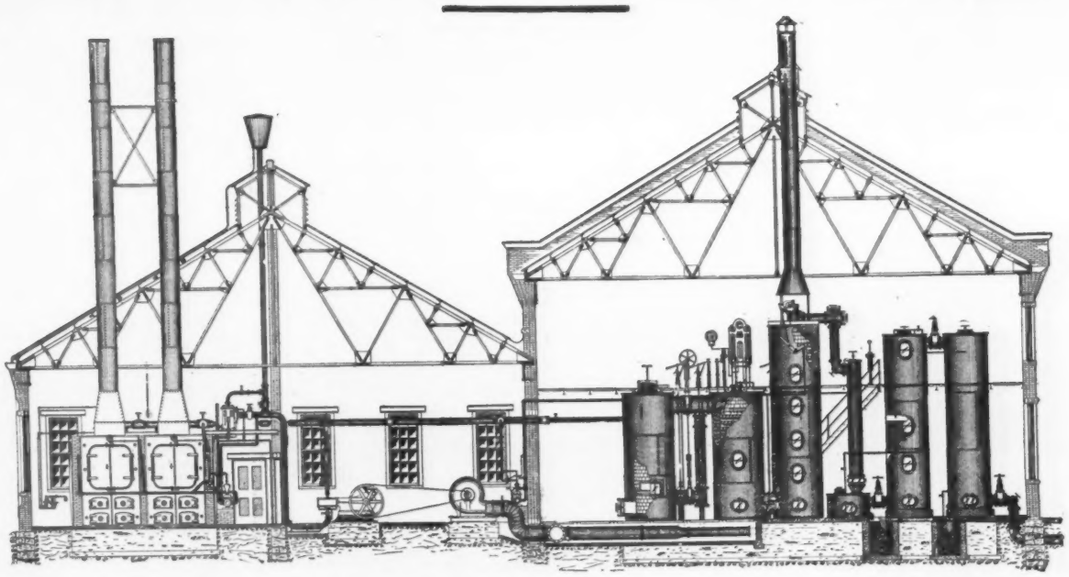

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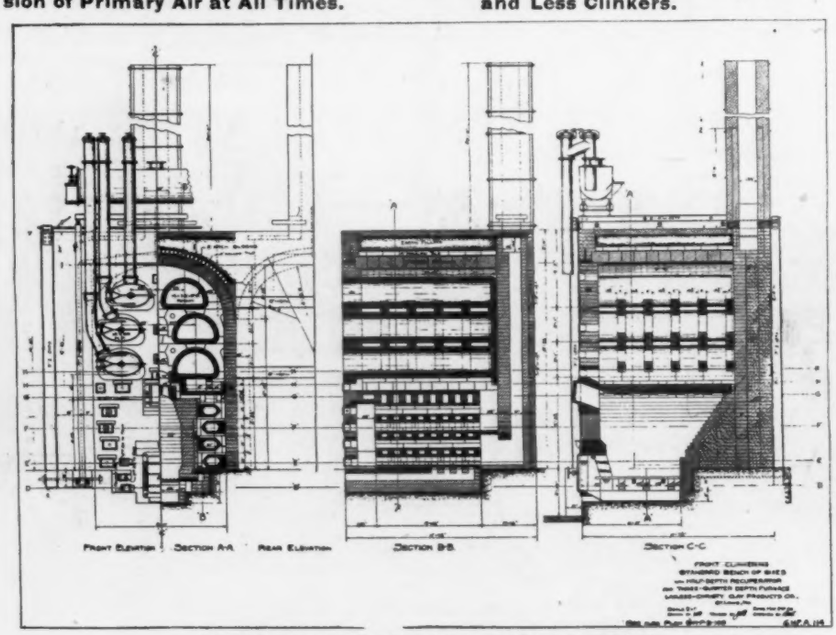

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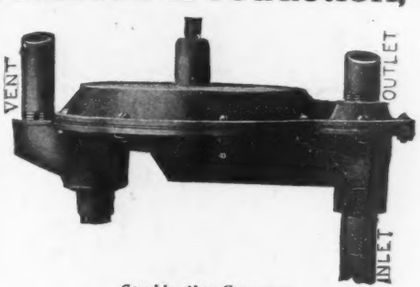

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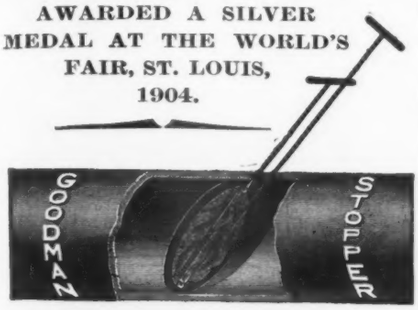

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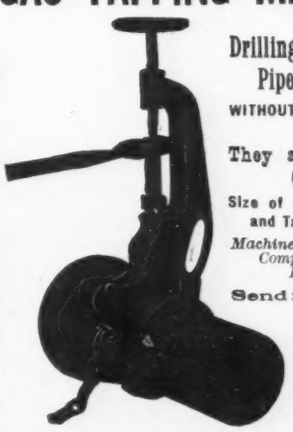

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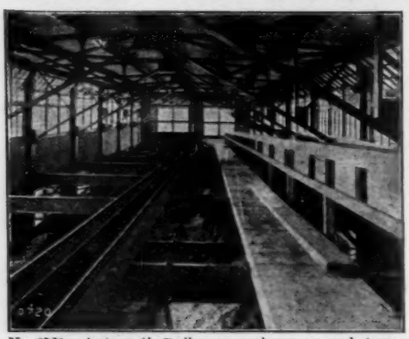

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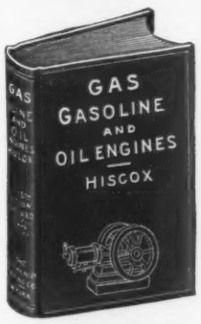

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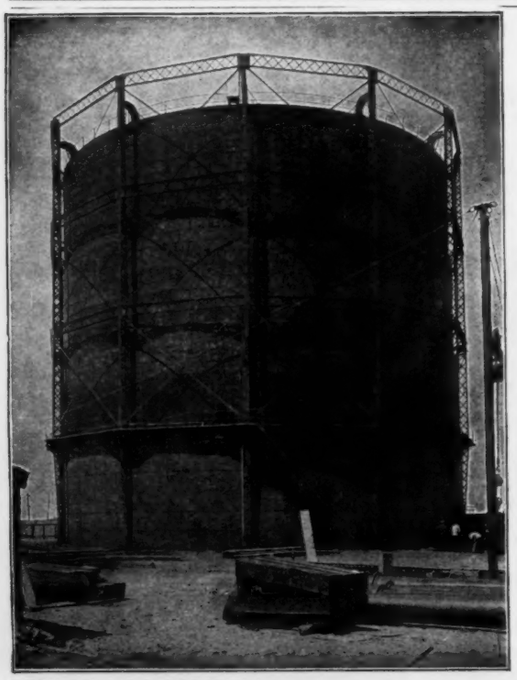

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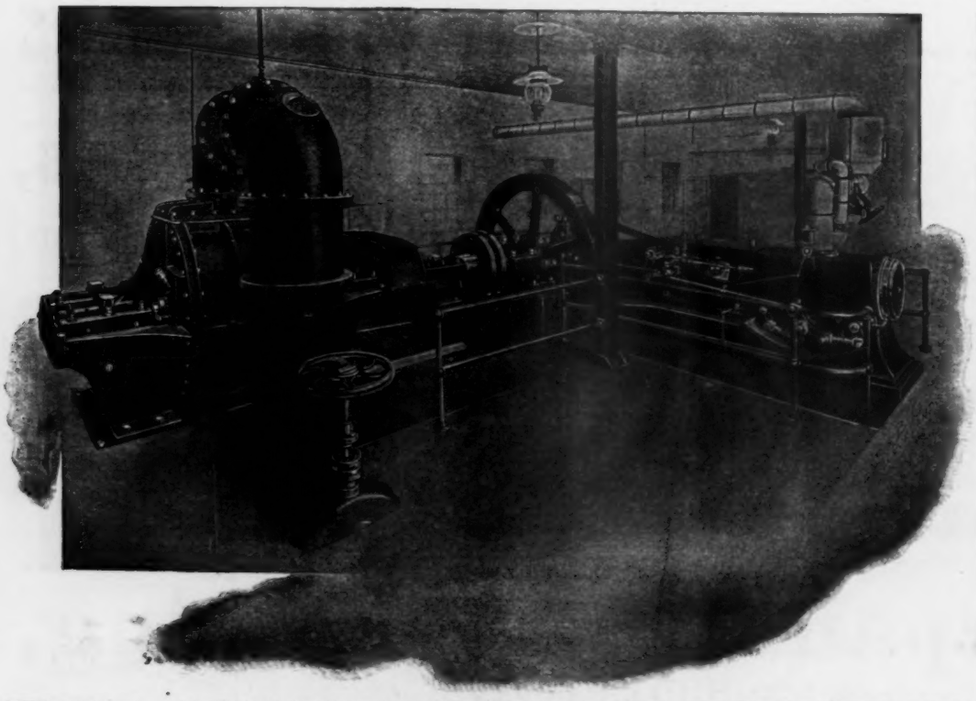

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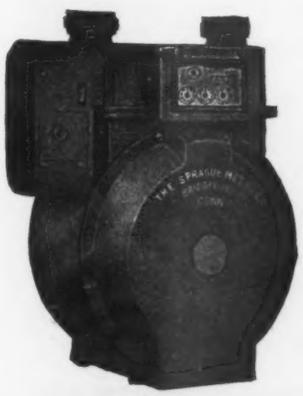

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